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BIOLOGIA CENTRALI-AMERICANA.

INSECTA.

ORTHOPTERA.

VOL. II.

THE ACRIDIIDÆ

BY

PROF. LAWRENCE BRUNER, B.Sc.

[*THE TETTIGINÆ*

BY

ALBERT P. MORSE],

AND

THE PHASMIDÆ

BY

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INTRODUCTION.

THIS Volume includes the enumeration of the species belonging to the families Acridiidæ and Phasmidæ. The Phasmidæ, as explained in the introductory remarks to that group on p. 343, are placed at the end of Volume II. for the sake of convenience, no other course being possible, our material having been entrusted many years ago to Hofrath C. Brunner von Wattenwyl, to include in his general Monograph of the family. The concluding portion of this important memoir was issued during the past year, just as Prof. L. Bruner was finishing his studies of the Acridiidæ. Mr. R. Shelford then set to work and compiled from it a list of the Mexican and Central-American Phasmids, and a key to the genera and species, which we published in November last (pp. 343–377).

The available material for the Acridiidæ was so very limited, especially from Northern Mexico, that Prof. Bruner has considered it advisable to include in his enumeration all the species that are likely to occur in the region under investigation, those brought in for comparison only being placed in square brackets, as in the Phasmidæ and in Volume I. of this subject. The subfamily Tettiginæ, the account of which has been contributed by Mr. Albert P. Morse (pp. 3–19), is illustrated by figures in the text; and the rest of the Acridiidæ and the Phasmidæ each by four uncoloured Plates, the original drawings for which were made under the supervision of Prof. Bruner and Hofrath C. Brunner v. Wattenwyl respectively, though they were all lithographed in Vienna.

The illustrations having been prepared in advance, various alterations in the names, noted in the "List of Plates" and individually in the text, have since become necessary.

ED.

February 1909.

ERRATA ET CORRIGENDA.

Vol. I.

Page	Line	
34	5	for 3 read 2.
187	27	for *bioculata* read *biocellata*.
236	16	for *C. mexicano* read *C. macilento*.
261	39	for *O.* read *P.*
274	31	for *P.* read *O.*
296	28	for *gracilis* read *gracile*.
302	7	for *californica* read *californiana*.
387	21	after Guatemala insert Senahu (*Champion*).
390	29	for *dentrifrons* read *dentifrons*.
414	33	for *bivattata* read *bivittata*.
417	24	for *mexicana* read *pallidespinosa*.
421	24	for *obtusus* read *obtusa*.
446	39	erase the localities "Bugaba and Volcan de Chiriqui (*Champion*)," these referring to the following species, *D. rosescens*.
450	28	for *mexicana* read *hægei*.

Vol. II.

88	6	for *Metaleptes* read *Metaleptea*.
89	3	for *Scolocephala* read *Scolocephalus*.
103	38	erase the locality Camacho in Zacatecas.
112	14	for *L. coquelletti* read *L. coquilletti*.
115	33	*for* Camnulla *read* Camnula.
116	7	*for* Agymnastes *read* Agymnastus.
116	35	*for* Scirtettica *read* Scirtetica.
117	25	*for* Mestobregma *read* Trachyrhachis.
152	5	for *discoides* read *discoidea*.
204	31	The locality Colon [Aspinwall] is incorrectly quoted under "Mexico": it should follow the Mexican habitat on the next line, under "Panama."
225	17	for *Trapidinotus* read *Tropidonotus*.
240	13	for *Rutioderes* read *Rutidoderes*.
248	32	for *T. humilis* read *R. humilis*.
266	37	*for* Tres Maries Is. *read* Tres Marias Is.
298	19	for **vittafrons** read **vittifrons**.
337–339		The generic name **Rhytidichrota**, quoted in many places on these pages, must be altered to **Rhytidochrota**.
360	3	for *P. saussurei* read *B. saussurei*.
354 356 377	12 23 16	The reference to *Diapheromera calcarata*, Burm., having been figured under the name *Trychopeplus spinoso-lobatus* is incorrect and must be erased, an uncorrected cancelled impression of Plate VI. having been used by the Editor for checking the figure in question.

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ZOOLOGIA.

Class INSECTA.

Order ORTHOPTERA (continued).

Fam. ACRIDIIDÆ *.

The family Acridiidæ among the Orthoptera is one of the most extensive and important groups of insects belonging to the order. Although considerable attention has already been devoted to them by entomologists, they remain little known when compared with the other related families. This is perhaps largely due to the fact that Dr. H. de Saussure, our most active worker in Orthoptera during recent years, has devoted his energies to the Blattidæ, Mantidæ, Gryllidæ, and Locustidæ. It is also quite probable that the material difference in haunts and habits among the various species of locusts, as compared with the insects belonging to the families just named, renders them less conspicuous. This being the case, the general collector passes many forms by when otherwise he might have observed and taken them.

Although the material submitted to the writer by the Editors is less complete than could be desired, this deficiency has been in a measure made good by the study of a number of public and private collections. Especially deserving mention are those of the United States National Museum, the California Academy of Sciences, the American Museum of Natural History in New York, and the Museo Nacional, Tacubaya, Mexico. Of the private collections, those furnished by Dr. Henri de Saussure, of Geneva, Switzerland; Samuel H. Scudder, Cambridge, Massachusetts;

* By LAWRENCE BRUNER, Professor of Entomology in the University of Nebraska, U.S.A. The Subfam. Tettiginæ by ALBERT P. MORSE, Curator of Zoological Museum, Wellesley College, Wellesley, Massachusetts.

Charles C. Deam, Bluffton, Indiana; Professor W. S. Blatchley, Indianapolis, Indiana; O. W. Barrett, Tacubaya, Mexico, are most important. The writer is especially indebted to Dr. H. de Saussure, who was kind enough to send the types of a number of the species described by him during his active days in connection with the natural history of Mexico, by means of which it has been possible to clear up many points regarding the synonymy of several genera and species. He has also to thank Samuel H. Scudder for his advice and co-operation during the preparation of this work.

The Acridiidæ are represented in Central America by seven of the nine subfamilies or tribes recognized by Brunner v. Wattenwyl in his 'Révision du Système des Orthoptères.' They may be separated by the following table:—

Table for determining the Subfamilies of Acridiidæ.

A¹. Claws without cushion or arolium between them; pronotum extending over the abdomen; tegmina lobiform . . . . . TETTIGINÆ.

A². Claws with cushion or arolium present.

*b*¹. Antennæ shorter than the front femora . . . . . MASTACINÆ.

*b*². Antennæ longer than the front femora.

*c*¹. Prosternum smooth, not provided with a tubercle, swelling, or spine.

*d*¹. Fastigium of the vertex but little declivous, meeting the face in a more or less well-defined angle; the face usually very oblique. Wings as a rule without dusky band . . . . . TRYXALINÆ *.

*d*². Fastigium of the vertex rounded at its point of junction with the face; the latter vertical or nearly so. Wings usually with coloured disk and well-defined dusky band . . . . . ŒDIPODINÆ *.

*c*². Prosternum in front laminately elevated, tuberculate or spined.

*d*¹. Foveolæ of the vertex above, contiguous, forming the apex of the fastigium. Front strongly receding . . . . . PYRGOMORPHINÆ.

*d*². Foveolæ of the vertex above (but never forming the apex of the vertex) or lateral, or below, or wanting.

*e*¹. Foveolæ above, open behind. Prosternum swollen, rarely spined. PAMPHAGINÆ.

*e*². Foveolæ lateral or inferior, closed behind or (often) entirely wanting. Prosternum distinctly spined or tuberculate . . ACRIDIINÆ.

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* These two subfamilies are occasionally difficult to distinguish, therefore there is given here, in an English form, the detailed distinctions laid down by Stål (Recensio Orthopt. i. pp. 6–7):—

Fastigium of vertex not or slightly, rarely strongly, declivous; front trending more or less, generally strongly and obliquely, backward; eyes generally longer than the infra-ocular portion of the genæ, rarely shorter or of equal length, and in these cases the front is very oblique; antennæ sometimes ensiform, inserted between or below the middle ("inter medium vel pone medium") of the eyes. Metazona rarely longer, generally shorter than the prozona,

Subfam. *TETTIGINÆ.*

This group of locusts, in consequence of the diminutive size, dull colouring, and inconspicuous habits of its members, has long been neglected by collectors and systematists alike. Very few specimens find their way into collections, and, in consequence, they are exceptionally difficult to separate into species. In many cases differences in structure of the most obvious character formerly regarded as indicative of specific distinctness and used in description have been discovered to be of little or no value; on the other hand, the gradation of forms is so close, and the systematic differences between them in many groups so slight, that individual variation encroaches largely on specific characters. When in addition to these factors we encounter also

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the hind margin rarely rectangulate or subrectangulate, generally obtuse, the median carina not cristate; sulci of the prozona either obliterated or interrupted on the disk, the posterior of these not or but very slightly recurved, never confluent with the principal sulcus (*i. e.* that separating the prozona and metazona); lateral lobes generally narrowed in passing downward, rarely longer than deep, with parallel anterior and posterior margins; tegmina generally lacking the intercalary vein, the anal and axillary veins generally united at a greater or less distance from the base; arolia generally of medium size or large; metasternal lobes not or but slightly separated . . . . . TRYXALINÆ.

Fastigium of vertex generally strongly declivous, slightly or very slightly prominent; front not or very slightly oblique, generally vertical or subvertical; eyes generally small or rather small, rarely a little longer than the infra-ocular portion of the genæ; antennæ linear or sublinear, generally inserted above the middle of the eyes, sometimes almost above the eyes themselves ("plerumque ante medium, interdum fere ante oculos"). Pronotum furnished with a median carina often wholly or partly cristate, the metazona typically longer than the prozona, the hind margin generally rectangulate or subrectangulate, the sulci of the prozona either interrupted or the anterior sulcus alone continuous and bisecting the carina or crest, rarely both continuous, the posterior sulcus recurved and frequently confluent with the principal sulcus; lateral lobes transverse (*i. e.* longer than deep) or subtransverse, the front and hind margins parallel or subparallel; tegmina generally furnished with an intercalary vein, the anal and axillary veins frequently running free to the margin; hind femora generally broad, and above and below compressed; arolia small; metasternal lobes generally somewhat distant . . . . . ŒDIPODINÆ.

To this may be added also the following from Brunner v. Wattenwyl (Rév. Syst. Orthopt. p. 102, nota):—

The distinction between the Tryxalinæ and Œdipodinæ is somewhat arbitrary and rests on individual perception ("l'estimation personelle"). When, however, the relative position of the front and the vertex (on which he rests his tabular distinction) leaves one in doubt, the presence or absence of foveolæ may guide one—Tryxalinæ having in this case very distinct foveolæ, while in the Œdipodinæ they are effaced. Moreover, the species here taken into consideration, when they are Tryxalinæ have the mediastinal and scapular areas of the tegmina regularly reticulate by transverse veinlets; while if they are Œdipodinæ these areas are always very irregularly reticulated.

those incident to wide distribution, with its concomitant differences in environment, we have presented an amount of difficulty before which the most experienced systematist may reasonably pause. Notwithstanding, it is a most interesting assemblage—containing many graceful, grotesque, dainty, bizarre, and beautiful forms, as a glance at the pages of Bolivar's monograph will show—and offers to the student of variation, of evolution of form, a field where he will be put upon his mettle.

A point has been reached, in some genera at least, where the methods of study and publication hitherto in vogue must give way to something better, more thorough and scientific: material must be secured in sufficient series and from particular localities; descriptions, however minute and carefully worded, must be accompanied by drawings of details known or likely to be of diagnostic value, in order to convey a sufficiently definite knowledge of the form described. This plan, which I had hoped to follow in the present treatise, I have reluctantly been compelled to abandon. Nor can I hope to have been more uniformly successful in the discrimination of species than my predecessors.

The sequence of groups and genera is that adopted by Bolivar in his scholarly 'Essai'*, a work that is a necessity to the student of the subfamily. The keys to genera and species are based upon this, though I have discarded certain characters which experience has shown to be misleading or of little importance—notably that of difference in extent of pronotum and wings, a kind of dimorphism of very common occurrence in the entire family.

The most useful characters of practical value are those drawn from the form and proportions of the eyes, vertex, and facial costa; the form of the pronotum and its parts (exclusive of mere length); of the femora, especially the intermediate; and, to some extent, the proportionate length of the joints of the posterior tarsi. I have also made some use (*e. g.* in *Tettigidea*) of a character not hitherto reported which should be explained here. If a sufficient number of Tettiginæ be examined, it will be noticed that opposite the distal end of the tegmina the lateral carinæ run obliquely downward and backward from the dorsal edge of the disk of the pronotum to the ventral edge of the hind process. Behind this point the dorsal edge of the process is usually formed by a carina which generally is continued forward a greater or less distance nearly parallel to the lateral carina, sometimes not disappearing until after it has crossed the shoulder, and separating in such cases a narrow triangular or linear area from the rest of the disk. This carina I have called the humero-apical carina, and the area cut off by it the scapular area (see figures of *Otumba* and *Tettigidea*). Under measurements, "total length" refers to the distance from the vertex to the end of the pronotum or wings as the case may be.

Besides Bolivar's 'Essai,' the only work worthy of note in connection with the region

* Bolivar, Ign., "Essai sur les Acridiens de la Tribu des Tettigidæ" [Annales de la Société Entomologique de Belgique, xxxi. pp. 175–313, tabb. 4, 5 (1887)].

under consideration is Prof. Bruner's short article on "Nicaraguan Orthoptera"*, containing the description of one species and brief mention of seven others, with several figures. Under bibliography I have referred simply to the original description, to the monograph, and to publications treating of the region under consideration.

In addition to the material sent me for examination by the Editors of the 'Biologia,' I have had for study and treatment a considerable number of Tettiginæ from Central America contained in the collections of Prof. Bruner (including most of those referred to in his above-mentioned paper) and of Mr. S. H. Scudder—in all, over 150 specimens. To these gentlemen I desire to express my obligations for this privilege, and for the opportunity to study other forms whose identity was of importance relative to the nomenclature of the material here considered.

Key to Groups and Genera.

A. Anterior femora carinate above.	
B. Facial costa very widely forked, forming a facial scutellum.	CLADONOTÆ.
(Elytra and wings absent.)	TYLOTETTIX, gen. nov.
BB. Facial costa narrowly forked, or, if widely so, with elytra present.	
C. Posterior angles of lateral lobes of pronotum turned outward, obliquely truncate behind	METRODORÆ.
D. Mid-carina of pronotum conspicuously serrato-undulate. Elytra minute, elongate; vertex concave.	CHIRIQUIA, gen. nov.
DD. Pronotum flat above, little depressed. Elytra lanceolate. Body slender	OTUMBA, gen. nov.
DDD. Pronotum strongly depressed. Body stout. Vertex truncate. Elytra and wings absent	PLATYTHORUS, gen. nov.
CC. Posterior angles of lateral lobes of pronotum turned downward	TETTIGIÆ.
E. Facial costa widely forked, scutelliform. A short supernumerary carina midway between the humeral angles and the mid-carina	OCHETOTETTIX, gen. nov.
EE. Facial costa narrowly forked; rami parallel or little divergent.	
F. Vertex considerably wider than eye, more or less advanced. Antennæ stout, joints short and broad. Pulvilli of posterior tarsi flat or rounded below	TETTIX, Latr.
FF. Vertex truncate, narrow, equal to or narrower than eye, rarely a little wider. Antennæ slender. Pulvilli spiculate	PARATETTIX, Bol.

* Bruner, Lawrence, "Nicaraguan Orthoptera" [Bulletin from the Laboratories of Natural History of the State University of Iowa, iii. no. 3, pp. 58–69, tabb. 2, 3 (1895)].

AA. Anterior femora sulcate above	BATRACHIDEÆ.
G. Sides of vertex terminating anteriorly in distinct, oblique, transverse, subhorizontal carinæ.	
H. Facial costa sinuous in profile. Elytra minute, elongate. Posterior sinus of lateral lobes barely indicated	Plectronotus, gen. nov.
HH. Facial costa convex in profile. Elytra ovate, of normal size. Posterior sinus normal	Tettigidea, Scudd.
GG. Sides of vertex convex, transverse carinæ obsolete	Scaria, Bol.

Group **CLADONOTÆ.**

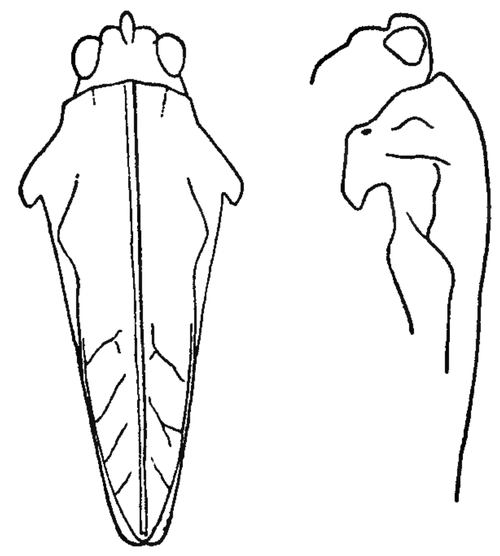
TYLOTETTIX, gen. nov.

Related to *Diotarus*, but having the face retreating, the facial scutellum deeply concave, with high marginal carinæ; the vertex strongly convex in front, with a very prominent mid-carina; the anterior margin of the pronotum truncate; the genicular and femoral lobes of the hind femora prominent. The type is *T. sinuatus*, described below.

1. **Tylotettix sinuatus,** sp. n.

Crimisus sp., Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 61, t. 3. fig. 1[1].

Face retreating, with prominent carinæ; in profile, slightly excavated at the lower edge of the scutellum, deeply (almost rectangularly) so at its upper margin, where the carinæ unite to form the very prominent mid-vertical carina, which is continued backward to a point just behind the level of the front margin of the eyes. Seen from above, the vertex is twice the width of one of the eyes, the mid-carina projects in front of the eyes nearly the width of one of them, and on each side of this the front margin of the vertex is formed by a short transverse carina projecting convexly between the mid-carina and the eyes, but reaching neither. Pronotum rather sharply tectiform, the mid-carina cristate, arched anteriorly, nearly straight posteriorly; front margin truncate; hind process abbreviated, not reaching the apex of the hind femora, with rounded, subemarginate tip; lateral carinæ bent inward, elevated and compressed behind the humeral angles, sinuate in both dorsal and lateral views; hind process with oblique elevated rugæ, three or four on each side, running inward and forward from the humero-apical carinæ nearly to the mid-carina; scapular area, wings, and elytra absent. Fore and mid-femora stout, two and one-half times as long as wide, strongly carinate, lobate beneath with strongly sinuate margins; hind femora stout, genicular and femoral lobes prominent.



Total length, ♂, 8·7: pronotum 7·7; post. fem. 5·25; antennæ 2·3 millim.

Hab. Nicaragua (*Shimek, in coll. Bruner* [1]).

One male, from "a swampy locality."

Group **METRODORÆ.**

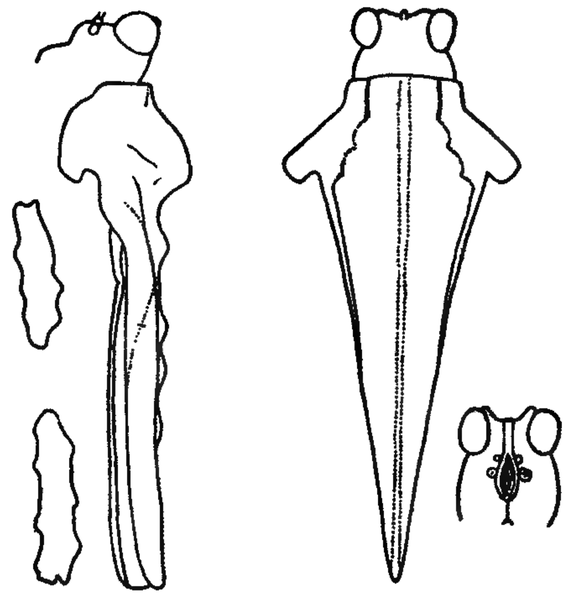
CHIRIQUIA, gen. nov.

Related to *Pterotettix*, especially in the form of the elytra, but differing from that genus in having the posterior ocelli below the level of the eyes and also in the structure of the vertex.

1. **Chiriquia serrata,** sp. n.

Cota saxosa (Bol.?, part.), Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 61 [1].

Body somewhat depressed. Face moderately retreating. Eyes large, globose, very prominent, elevated on the sides of the vertex. Antennæ inserted below the level of the eyes, equidistant from the eyes and each other. Posterior ocelli barely below the level of the eyes. Vertex horizontal, elevated at the sides above the eyes to form transverse carinæ running obliquely downward and inward to the mid-carina; the latter conspicuous from above, but hidden in side view by the prominent eyes, dividing opposite their lower part into high, rather widely divergent antrorse rami; from above, the vertex is nearly twice the width of one of the eyes, distinctly excavate, with a prominent median tooth (the mid-carina) reaching the level of the front margin of the eyes. Face in profile strongly crenate, the middle arc formed by the prominent rami of the frontal costa, the upper arc by the eyes terminated by a minute portion of the transverse carinæ of the vertex. Pronotum with truncate anterior margin and cuneate apex, of moderate width at the shoulders, granulate, rather flat above, with the exception of several prominent transverse rugæ, which form on the mid-carina a series of low teeth between the shoulders and apex, and in front of the humeral angles a high cristiform eminence convexly arcuate in front, concave behind, its height from the shoulders equal to two-thirds the depth of the lateral lobes; lateral lobes laminate, strongly produced, squarely truncate at the apex. Elytra minute, the exposed portion linear, five times as long as broad. Wings fully developed, reaching the apex of the pronotum, which passes the abdomen by about 1 millim. Anterior and middle femora very slender, the latter five times as long as broad, with irregularly sinuate margins; (hind legs missing).



Total length, ♂, 9·4: pronotum 8 millim.

Hab. NICARAGUA, Castillo (*Shimek, in coll. Bruner* [1]); PANAMA, Volcan de Chiriqui 2500 to 4000 feet (*Champion*).

Two males. Prof. Bruner's specimen is immature, and he referred it with some doubt to another genus, as noted above; but so similar is it to the adult male from Chiriqui described that I have no doubt of their specific identity.

OTUMBA, gen. nov.

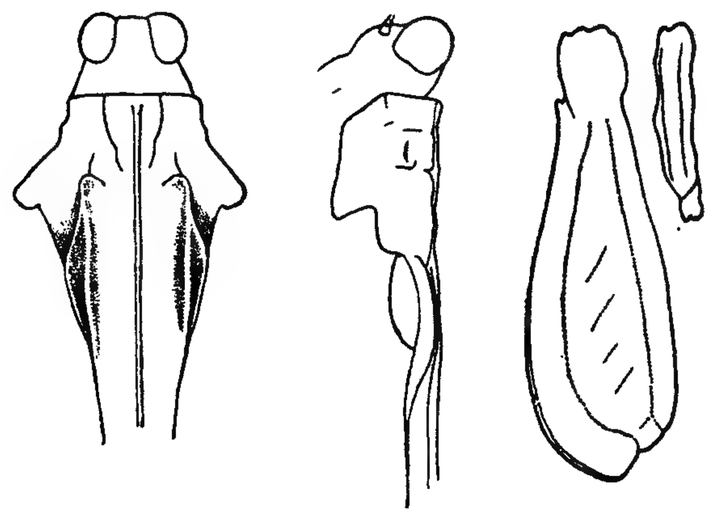
Related to *Metrodora*. Face strongly retreating. Eyes very large and prominent, elevated. Vertex truncate. Pronotum somewhat depressed, flat above; humero-apical carinæ exceptionally developed and separated from the lateral carinæ by a deep groove; scapular area very large; external angles of lateral lobes rectangular. Femora elongate, slender.

1. **Otumba scapularis,** sp. n.

Amorphopus sp., Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 61, t. 3. fig. 2 [1].

Antennæ long, reaching the humeral angles, filiform, very slender, joints 9–12 the longest. Face very retreating, convex opposite the insertion of the antennæ, which are placed a little below the level of the eyes. Eyes very large, globose, and prominent. Posterior ocelli exceptionally large, situated between the lower part of the eyes. Vertex truncate, scarcely as wide as one of the eyes, horizontal, terminating anteriorly in oblique transverse carinæ; the mid-carina distinct but very small; facial costa forking at the middle of the eyes (behind the ocelli) into very narrowly divergent, nearly

straight, moderately elevated antrorse rami, which are rather widely open below. Pronotum somewhat depressed, elongate, truncate in front, subulate behind, flat above, slightly depressed at the shoulders, granulate, coarsely rugose anteriorly, slightly swollen on each side between the end of the humero-apical carina and principal sulcus; the shoulders narrow, humeral angles very obtuse, sides of the hind process straight, mid-carina scarcely distinct, lateral carinæ prominent; humero-apical carinæ distinct, continued forward in a straight line on the shoulders to meet the lateral carinæ 1 millim. behind the principal sulcus, and separated from them by a deep narrow groove opposite the apex of the elytra. Elytra elongate, four times as long as wide, narrowly lanceolate, subacute at each end, nearly straight above, arcuate below. Anterior and middle femora slender (6×1, 5×1), with undulate margins; hind femora long and slender, genicular and femoral lobes small. Third joint of posterior tarsi equal to or a little longer than the first.



General colour rufous-brown, varied with fuscous, with blotches of pale green on the hind femora and on sides of the pronotum.

Total length, ♀, 12·5: pronotum 11·4; post. fem. 6; antennæ 4; width of the shoulders 2·6 millim.

Hab. NICARAGUA, Greytown (*Shimek, in coll. Bruner* [1]).

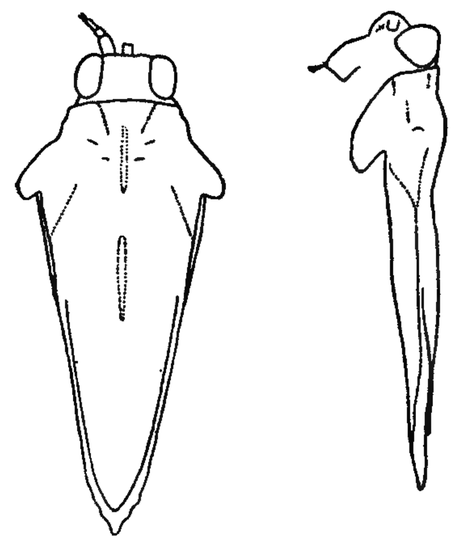
One female.

PLATYTHORUS, gen. nov.

Related to *Amorphopus*, but possessing elongate antennæ, with very large basal joints inserted on a level with the lower margin of the eyes; the anterior and middle femora little expanded; posterior tarsi with the first joint longer than the third; lateral lobes of pronotum turned outward, obliquely truncate, obtuse, and rounded.

1. **Platythorus camurus,** sp. n.

Body much depressed, granulate. Eyes of moderate size. Vertex horizontal, one and one-third times as wide as one of the eyes, squarely truncate, with small but distinct mid-carina, the transverse carinæ separated from it by a shallow groove, but continued into a low ridge running backward along each side of the mid-carina. Antennæ elongate, distinctly passing the shoulders, filiform, joints 7–10 the longest, the basal joint two-thirds the width of one of the eyes in length, inserted in a line with the lower margin of the eyes. Facial costa low above, forking midway between the ocelli and vertex into high, narrowly divergent rami, which form in profile a strong protuberance opposite the points of insertion of the antennæ. Pronotum strongly depressed, granulate, flat above, truncate in front, cuneate behind, with pinched, almost mucronate apex; mid-carina distinct in front of and behind the shoulders, nearly obsolete elsewhere, in profile undulate; lateral carinæ prominent, divergent anteriorly, humeral angles very obtuse; lateral lobes laminately produced, obliquely truncate at the apex, angles obtuse, rounded. Elytra and wings absent. Anterior and middle femora strongly carinate, with sinuato-lobate margins; hind femora partaking of the general depressed form of the body, but very stout from side to side; femoral lobes small, genicular lobes prominent, acutely pointed.



Total length, ♀, 9·6: pronotum 8·5; post. fem. 6·3; antennæ 5·5–6 (estimated) millim.

Hab. NICARAGUA, Chontales (*Janson*).

One female.

Group **TETTIGIÆ.**

OCHETOTETTIX, gen. nov.

Related to and resembling *Neotettix*, but differing from that genus in the wider furcation of the facial costa, which approaches that of the Cladonotæ; in the presence of supernumerary carinæ between the humeral angles and the mid-carina; and in having the humero-apical carinæ joined to the lateral carinæ; leaving no scapular area.

Key to Species.

Lateral lobes of pronotum with the posterior sinus very shallow . . . . . *barretti*, Hanc.

Lateral lobes of pronotum with the posterior sinus of normal size . . . . . *volans*, sp. n.

1. **Ochetotettix barretti,** Hanc.

Neotettix barretti, Hancock, Ent. News, x. p. 277 (Dec. 1899) [1].

Vertex very broad, twice the width of one of the eyes, and projecting in advance of them, its front margin convex, with a prominent median tooth, the mid-carina, whose apex is nearly half the length of one of the eyes in advance of their front margin; shallowly excavate above on each side of the mid-carina; the crown elevated, with indications of mammillæ close to and nearly opposite the middle of the eyes. Eyes of moderate size, but little protuberant. Face in profile convex, with a slight emargination at the lower end of the rami of the facial costa. Antennæ very short, inserted just below the level of the eyes, separated by a space three to four times greater than the distance between them and the eyes. Facial costa forking high up, opposite the upper part of the eyes; the rami of moderate height, smoothly sinuous, convergent below, forming a deep, concave, broadly lanceolate scutellum, acutely pointed above. Pronotum moderately tectiform, truncate before, cuneate behind, reaching the apex of the hind femora, the humeral angles very obtuse, sides of hind process nearly straight; surface granular-tuberculate; mid- and lateral carinæ prominent, sharp, the former arched in front of the shoulders, straight or slightly undulate behind. Supernumerary carinulæ short, distinct, placed just in front of the humeral angles, parallel to the lateral carinæ, midway between them and the mid-carina. Lateral lobes with the posterior sinus very shallow, somewhat as in *Nomotettix*. Elytra narrowly lanceolate, rounded at the apex. Wings absent. Anterior and middle femora short and stout, of the female $2\frac{1}{2} \times 1$, of the male almost clypeate, barely 2×1, the lower margins lobate; hind femora stout, genicular and femoral lobes conspicuous.

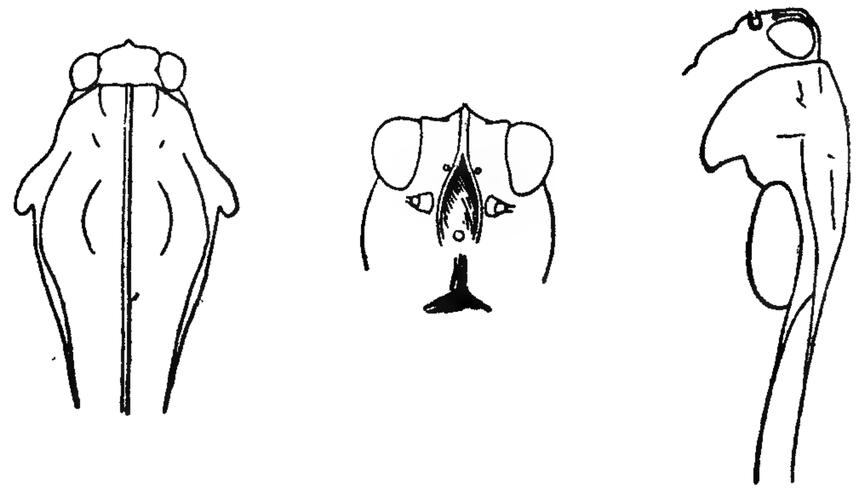
Total length, ♂ 7, ♀ 6·8–8: pronotum, ♂ 6, ♀ 6·2–7; post. fem., ♂ 4, ♀ 4–4·5; antennæ, ♂ 1·5, ♀ 2 millim.

Hab. MEXICO, Chilpancingo in Guerrero, Atoyac in Vera Cruz (*H. H. Smith*).

A male from Atoyac and three females from Chilpancingo.

2. **Ochetotettix volans,** sp. n.

A larger species, with fully developed wings and pronotum, readily distinguished from its congener by having the posterior sinus of the lateral lobes of the pronotum of normal size; the surface is more smoothly granulate; the shoulders broader, with more pronounced humeral angles; the elytra larger, long-elliptical, with rounded apex. The femora are of the same general character, but less stout, especially the intermediate pair of the male.



Total length, ♂ 11–11·5, ♀ 12–12·8: pronotum, ♂ 10·5, ♀ 11–11·7; post. fem., ♂ 4·5–4·8, ♀ 5–5·6; antennæ, ♂ 2, ♀ 2–2·5; pronotum beyond post. fem. 3–3·5 millim.

Hab. MEXICO, Dos Arroyos, Chilpancingo, Venta de Zopilote, Xucumanatlan, and Omilteme, all in Guerrero, 1000 to 8000 feet (*H. H. Smith*).

Two males and five females.

TETTIX, Latr.

Tetrix, Latreille, Hist. Nat. Crust. et Ins. xii. p. 161 (1804).

Tettix, Charpentier, in Germar's Zeitschr. für Ent. iii. p. 315 (1841); Bolivar, Ann. Soc. Ent. Belg. xxxi. pp. 195, 257.

It is with some doubt that I refer the two following forms to this genus, since they seem in some particulars to be almost as closely related to *Paratettix*. It is possible that further research may assign them a place distinct from either, but at present I am reluctant to do so in the absence of sufficient material to justify that course.

Key to Species.

Pronotum convex on the shoulders in both sections, subulate; mid-carina distinct behind the shoulders, but not elevated . . . . . *convexus*, sp. n.

Pronotum tectiform, abbreviated; mid-carina elevated throughout, subcristiform anteriorly . . . . . *tectus*, sp. n.

1. **Tettix convexus**, sp. n.

Antennæ stout. Eyes small, globose. Vertex nearly twice as wide as one of the eyes, truncato-convex, a little advanced; mid-carina small, little produced. Facial costa rather widely sulcate, sides subparallel, in profile advanced before the eyes, smoothly convex opposite the points of insertion of the antennæ, slightly concave above them. Pronotum truncate anteriorly, subulate behind, granose-scabrous, convex on the shoulders in both sections; the mid-carina elevated and subcompressed anteriorly, slightly depressed and scarcely distinct on the shoulders, distinct but not elevated behind them. Wings caudate, passing the hind process. Elytra oblong, rounded or subacuminate at the tip. Femora rather slender; mid-femora with both margins gently sinuate. Pulvilli of hind tarsi flat or rounded below, the second and third equal.

Total length, ♂ 11·7, ♀ 12·5: pronotum, ♂ 10·3, ♀ 10–10·7; post. fem., ♂ 4·6, ♀ 5–5·4; antennæ, ♂, 2 millim.

Hab. Mexico, Mexico city (*Bruner*, *F. D. Godman*).

A pair in Prof. Bruner's collection and a female obtained by Mr. Godman. This is a peculiar species, bearing considerable resemblance to *Paratettix rugosus*, but distinguished from it by the wider and somewhat advanced vertex, the smaller eyes, stouter antennæ, less robust form, and unexpanded middle femora of the male.

2. **Tettix (?) tectus**, sp. n.

Antennæ stout, joints very short and broad. Vertex nearly twice as wide as one of the eyes, a little advanced, truncato-convex, the mid-carina prominent. Eyes small, globose. Facial costa rather narrowly sulcate, moderately protuberant, in profile convex opposite the points of insertion of the antennæ, shallowly excavate opposite the eyes. Pronotum obtusely tectiform, anterior margin truncate, apex cuneate, not passing the hind femora; mid-carina elevated, subcristate anteriorly, depressed and sinuate on the shoulders, undulate behind them. Anterior femora with the margins entire or slightly undulate. Middle femora stout, the margins slightly sinuate, with three small lobes above and two below. Posterior femora robust. Posterior tarsi with the pulvilli flat or rounded below.

Total length, ♂ 7·5–8, ♀ 8·3: pronotum, ♂ 6·7–7·4, ♀ 7·4; post. fem., ♂ 4·5, ♀ 4·8; antennæ, ♂, 2·5 millim.

Hab. Mexico, Mexico city (*Bruner*, *H. H. Smith*).

Two males obtained by Mr. H. H. Smith and a female in Prof. Bruner's collection. This species bears a striking resemblance in profile to *Paratettix sinuatus*, but the form of the antennæ, pulvilli, and vertex seems to bring it to this genus. The female has a malformation of the pronotum in the shape of a convex elevation running transversely across the middle of the hind process.

PARATETTIX, Bol.*

Paratettix, Bolivar, Ann. Soc. Ent. Belg. xxxi. pp. 195, 270 (1887).

This is the dominant genus of the group Tettigiæ in subtropical countries, taking the place of *Tettix* in more northern climes. Like *Tettix* and *Tettigidea*, it includes an assemblage of forms approaching each other so closely as to tax the most critical eye. This fact, accompanied as it is by individual and geographic variations, and usually complicated by the lack of material in satisfactory series, makes the genus a most perplexing one to the systematist. Of the eight species reported from Central America I have seen all but two. There are doubtless others to be found; nor is it impossible that some forms here regarded as varieties, and provisionally referred to species, should be given specific rank, while others may perhaps prove to be synonyms.

Key to Species.

A. First and third joints of posterior tarsi of equal length . . . . . *peruvianus*, Bol.

AA. First joint of posterior tarsi longer than third.

B. Margins of the middle femora strongly sinuato-lobate.

C. Middle femora very widely expanded, clypeate . . . . . *schochi*, Bol.

CC. Middle femora little expanded.

D. Vertex equal to eye or a little wider, sometimes very slightly advanced. Pronotum elevated at the shoulders; mid-carina elevated throughout, subcristate anteriorly. Middle femora broad, strongly sinuato-lobate . . . . . *toltecus*, Sauss.

DD. Vertex equal to eye or a little narrower, truncate; eyes more prominent. Pronotum rather flat on the shoulders; mid-carina less elevated, sometimes indistinct posteriorly. Middle femora not quite as broad . . . . . *mexicanus*, Sauss.

BB. Margins of the middle femora entire or nearly so.

E. Vertex wider than eye.

F. Pronotum rather flat above, long-subulate; mid-carina distinct, but low, except in front of the shoulders, where it is subcompressed and elevated . . . . . *durus*, sp. n.

FF. Pronotum with the shoulders more elevated; mid-carina higher, acute, compressed throughout, subcristate in front of the shoulders; hind process abbreviated . . . . . *sinuatus*, sp. n.

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* Since these pages have been in type, the genus *Paratettix* has been divided into three by Hancock [Ent. News, x. pp. 275–277 (Dec. 1899)], under the names *Allotettix*, *Paratettix*, and *Telmatettix*.

EE. Vertex narrower than eye.

G. Mid-carina of the pronotum subgibbous anteriorly . . . *fallax*, Bol.

GG. Mid-carina of the pronotum scarcely elevated . . . . . *aztecus*, Sauss.

1. **Paratettix peruvianus,** Bol.

Paratettix peruvianus, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 272 (1887)[1]; Giglio-Tos, Boll. d. Mus. di Zool. ed Anat. Comp. d. R. Univ. di Torino, xii. no. 301, p. 3 (1897)[2].

Hab. PANAMA, Colon[2], Rio Cianati, Punta di Sabana, Darien[2].—PERU[1].

Unknown to me. Lately referred to a new genus, *Allotettix*, by Hancock.

2. **Paratettix schochi,** Bol.

Paratettix schochii, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 274 (1887)[1]; Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 62[2].

Total length, ♂ 10·7–13·5, ♀ 14–17·5: pronotum, ♂ 8·6–11·3, ♀ 11·5–15; post. fem., ♂ 4·5–6, ♀ 6–7·5; pronotum beyond post. fem., ♂ 2–2·5, ♀ 2·5–3·5; wings beyond pronotum, ♂ 1–2, ♀ 1·5–3 millim.

Hab. MEXICO, Colima (*coll. S. H. Scudder*: ♀), Chilpancingo, Rincon, and Xucumanatlan, all in Guerrero, 2800 to 7000 feet (*H. H. Smith*: ♂ ♀), Jalapa (*coll. Bruner*[2]); GUATEMALA[1], near the city (*Champion*: ♂ ♀); NICARAGUA, Chontales (*Janson*: ♂), Ometépe (*Shimek, in coll. Bruner*[2]: ♂ ♀).

This is an easily recognizable species, though very variable in size, as the above-given measurements show.

3. **Paratettix toltecus,** Sauss.

Tettix tolteca, Sauss. Rev. et Mag. Zool. 1861, p. 401[1].

Paratettix toltecus, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 273[2]; Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 62[3].

Paratettix toltecus extensus, Morse, Journ. New York Ent. Soc. vii. p. 198 (1899)[4].

Hab. NORTH AMERICA, South-western United States, Lower California.—MEXICO[1 2], Cuernavaca (*Deans, in coll. Bruner*); NICARAGUA, Ometépe (*Shimek, in coll. Bruner*[4]).

This species is common in the South-western United States of America, having been recorded from California, Colorado, Arizona, and Texas, and is probably more plentiful in Mexico than the material at hand seems to indicate. I have also seen specimens from San José del Cabo, Lower California, Cuernavaca, and Ometépe. The long-winged form is distinguished as *P. toltecus extensus*; it has been found in California[4], as well as at Ometépe, Nicaragua[4].

4. **Paratettix mexicanus,** Sauss.

Tettix mexicana, Sauss. Rev. et Mag. Zool. 1861, p. 400[1].

Paratettix mexicanus (part.), Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 275[2].

Paratettix caudatus, Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 62[3].

Hab. NORTH AMERICA, Pinal Mountains, Arizona.—MEXICO [1] [2], Savanito and Sierra Nola (*coll. Scudder*), Cuernavaca, Teapa (*H. H. Smith*), Atoyac (*H. H. Smith, Schumann*), San Rafael, Vera Cruz (*Townsend, in coll. Bruner*), Medellin, Vera Cruz (*Heyde, in coll. Bruner; H. H. Smith*), San Lorenzo, near Cordova (*M. Trujillo*); GUATEMALA, near the city (*Champion*); NICARAGUA (*coll. Bruner* [3]); COSTA RICA, Caché, Volcan de Irazu (*Rogers*).

The majority of the specimens of *Paratettix* that I have seen from Central America belong to this species or to varieties thereof. Bolivar [2] reports *P. mexicanus* from Texas, Georgia, and North Carolina, but it is probable that he regarded *P. cucullatus* as a variety of it.

5. **Paratettix durus,** sp. n.

Vertex truncate, wider than one of the eyes, transverse, narrowed anteriorly, mid-carina little produced. Eyes prominent, oblong. Facial costa rather widely sulcate; rami evenly divergent, sometimes subparallel, in profile little protuberant. Pronotum rather flat above, except anteriorly, scabrous-granulate; mid-carina subcompressed and elevated anteriorly, depressed at the shoulders, acute but not elevated, undulate or nearly horizontal behind them; hind process subulate, passing posterior femora about 2 millim. Elytra oblong, subacuminate or rounded at the apex. Wings caudate, passing pronotal process 1–2 millim., infuscated at the apex. Anterior femora subundulate beneath; middle femora rather stout, entire or very slightly undulate above, subsinuate beneath. First joint of posterior tarsi distinctly longer than the third.

Total length, ♂, 10–11·5: pronotum 8·7–9·3; post. fem. 4·3–5; antennæ 2·5 millim.

Hab. MEXICO, Medellin in Vera Cruz (*Heyde, in coll. Bruner*), Teapa and Frontera in Tabasco (*H. H. Smith*).

Six specimens, all males—four from Vera Cruz and two from Tabasco, one of the latter now being without head.

6. **Paratettix sinuatus,** sp. n.

Very similar to the preceding, *P. durus*, but differing from it in having the mid-carina of the pronotum more elevated throughout and more sinuate in profile, and the pronotum a little more elevated on the shoulders. Hind process of the pronotum abbreviated, cuneate, not passing the hind femora, and of the same length as the wings.

Total length, ♂ 6·8–7·4, ♀ 8·4–9: pronotum, ♂ 6·3–6·7, ♀ 7·4–7·6; post. fem., ♂ 4·4–4·7, ♀ 5; antennæ, ♂ 2·5, ♀ 2·5 millim.

Hab. MEXICO, Guanajuato (*Deans, in coll. Bruner*: ♂), San Rafael, Vera Cruz (*Townsend, in coll. Bruner*: ♂ ♀).

Two pairs from San Rafael and a male from Guanajuato. This may possibly prove to be a short-winged form of the preceding species.

7. **Paratettix fallax,** Bol.

Paratettix fallax, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 282 (1887) [1].

Hab. GUATEMALA [1].

I am unacquainted with this species, but according to Bolivar's description it is even smaller than *P. aztecus*. It was described from a female from Guatemala.

8. **Paratettix aztecus,** Sauss.

Tettix azteca, Sauss. Rev. et Mag. Zool. 1861, p. 400 [1].

Paratettix aztecus, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 282 [2].

Total length, ♂ 7·5–11·3, ♀ 9·3–13·5: pronotum, ♂ 5·6–8·7, ♀ 8–11; post. fem., ♂ 3·7–4·5, ♀ 4·5–6; antennæ, ♂ 3, ♀ 3; pronotum beyond post. fem., ♂ 0–2, ♀ 0·5–2; wings beyond pronotal process, ♂ 0·8–1·8, ♀ 0·3–1·7 millim.

Hab. NORTH AMERICA, Arizona, California [2].—MEXICO [1 2], Northern Sonora (*Morrison*), Villa Lerdo in Durango (*Höge*), Tepic, Orizaba (*coll. Bruner*), Acapulco, Atoyac, Teapa (*H. H. Smith*), San Lorenzo, near Cordova (*M. Trujillo*).—ANTILLES, Cuba [2].

A very graceful little insect, presenting considerable variation in size and stoutness of body. This species, and probably also the preceding, *P. fallax*, fall into the genus *Telmatettix*, recently proposed by Hancock [Psyche, ix. p. 7 (1900)].

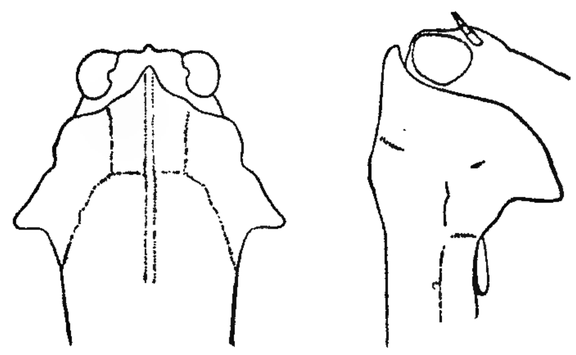
Group **BATRACHIDEÆ.**

PLECTRONOTUS, gen. nov.

Nearly allied to *Tettigidea* in general structure, but differing from it in the form of the facial costa, the minute elongate elytra, and, especially, in the structure of the pronotum, which is coarsely scabrous, with the posterior sinus of the lateral lobes all but obsolete and the posterior angles a little reflexed. Type *P. scaber*, described below.

1. **Plectronotus scaber,** sp. n.

Antennæ 21–22-jointed, slender, filiform, about reaching the base of the hind femora. Eyes of moderate size prominent. Vertex scarcely (♂), or one and one-half times (♀), as wide as one of the eyes, truncate in front, the mid-carina of moderate size and but little produced backward; the front margin transversely carinulate, the carinulæ and surface immediately behind them slightly depressed. Crown horizontal. Facial costa rather broadly sulcate, the margins sinuous, approximated below the points of insertion of the antennæ; in profile, strongly convex opposite the lower margin of the eyes, moderately concave opposite the middle of them. Pronotum tectiform, very coarsely scabrous, granulate; the front margin advanced, with concave sides and uncinate apex extending to the end of the mid-carina of the vertex, a little behind the level of the front of the eyes; the hind process abbreviated, its sides convex, apex acute; lateral lobes rather deep, the posterior angles acute, somewhat rounded at the tip and turned a little outward, the posterior sinus barely indicated; mid-carina subcristiform, sinuate, depressed at the shoulders, elevated and subcompressed in front of them; lateral carinæ well-developed, coarsely granulate-tuberculate on the humeral angles, which are very obtuse. Elytra minute (less than 1 millim. in length), elongate, rounded at the apex, the lower margin pale yellow. Legs much as in *Tettigidea*, but somewhat less stout; pulvilli of first joint of hind tarsi small.



Total length, ♂ 9, ♀ 12: pronotum, ♂ 7, ♀ 10; post. fem., ♂ 5·5, ♀ 7; antennæ, ♂ 5·5, ♀ 6; post. fem. beyond pronotum, ♂ 1·5, ♀ 1·5 millim.

Hab. COSTA RICA, Caché (*Rogers*).

One pair.

TETTIGIDEA, Scudd.

Tettigidea, Scudder, Bost. Journ. Nat. Hist. vii. p. 476 (1862).

This is the dominant genus of the group Batrachideæ, numerous both in species and individuals. Dimorphism in length of pronotum and wings is common, occurring in the majority of the species of which I have seen any considerable numbers. In consequence of this, and other reasons stated, it is extremely difficult to frame a satisfactory key to the species, and the following must be looked upon as a tabulated statement of the more obvious differences existing rather than as a practical key to their determination. One species, *T. guatemalteca*, I have not been able to satisfactorily identify, though it may be one of the forms here treated; it is omitted from the key, but the description of it as given by Bolivar is quoted in full.

Key to Species.

A. Vertex blunt, more or less truncate; eyes prominent.
  B. Posterior sinus of the lateral lobes of the pronotum relatively shallow; vertex truncate.
    C. Dorsum of pronotum smoothly granulate, horizontal, distinctly depressed at the shoulders . . . . . *bruneri*, sp. n.
  CC. Dorsum of pronotum with conspicuous, nearly percurrent, irregular longitudinal rugæ; horizontal or somewhat depressed at the shoulders in the male, arched near the front margin in the female . . . . . *chichimeca*, Sauss.
  BB. Posterior sinus of the lateral lobes of the pronotum of usual depth; vertex scarcely truncate; pronotum granulate, horizontal in the male, a little arched in the female . . . . . *nicaraguæ*, Brun.
AA. Vertex a little advanced, subangulate; pronotum decidedly arched longitudinally . . . . . *plagiata*, sp. n.
AAA. Vertex advanced; eyes not prominent.
  D. Vertex equal to or less than one of the eyes in width, the mid-carina well-developed. Anterior margin of the pronotum little produced, rounded. Surface smoothly granulate, rugulæ barely visible. Scapular area distinct, triangular, widest at the humeral angles. A very small and slender species . . . . *parvula*, sp. n.
  DD. Vertex wider than one of the eyes.
    E. Scapular area absent. Surface smoothly granulate. Anterior margin of the pronotum little advanced, rounded. Mid-carina of vertex feebly developed . . . . . *nigra*, sp. n.
    EE. Scapular area present, narrow. Surface irregularly rugulose. Anterior margin of the pronotum strongly advanced, angulate, or rounded-angulate. Mid-carina of vertex well-developed . . . . . *tecta*, sp. n.

1. **Tettigidea bruneri,** sp. n.

Eyes prominent, globose. Vertex blunt, nearly truncate, equal to (♂), or wider than (♀), one of the eyes, horizontal, the crown a little elevated in the female; the mid-carina well-developed, extending but little backward. Facial costa prominent, widest below, rather widely sulcate. Pronotum granulate, tectiform, distinctly depressed at the shoulders; front margin little advanced, angulate; hind process abbreviated, not reaching the apex of the hind femora, depressed, sometimes a little reflexed at the tip, sides straight; scapular area barely indicated or lacking entirely; median carina prominent, sharp, subcristiform; lateral carinæ well-developed near the front margin, parallel, arcuately divergent behind, obsolete in front of the principal sulcus; posterior sinus of the lateral lobes shallow, one-third to two-thirds as deep as the anterior lobes. Hind femora robust, margins of the apex concave, genicular and femoral lobes well-developed.

General colour brown; face, venter, and apex of abdomen pale yellow; mid-carina of pronotum sometimes spotted with fuscous. A notable colour-variation is that presented by one female, in which the eyes, the top of the head, and the anterior portion of the pronotum (in the form of a triangle whose apex reaches the first sulcus) are yellow.

Total length, ♂ 9–10·5, ♀ 13–14: pronotum, ♂ 7·5–8·3, ♀ 10·5–11; post. fem., ♂ 6–6·5, ♀ 7·5–8; antennæ, ♂ 3·5–4, ♀ 4–4·5 millim.

Hab. Mexico (*colls. Bruner & Scudder*).

Five males and seven females.

2. **Tettigidea chichimeca,** Sauss.

Tettix chichimeca, Sauss. Rev. et Mag. Zool. 1861, p. 400[1].

Tettigidea chichimeca, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 296[2].

Hab. Mexico[1], Ciudad in Durango[2].

Among the material collected by Mr. H. H. Smith are two specimens which probably belong here—a short-winged male from Teapa, Tabasco, and a long-winged female from Atoyac, Vera Cruz. Saussure[1] gives the habitat as "Mexico calida."

3. **Tettigidea nicaraguæ,** Brun.

Tettigidea nicaraguæ, Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 62, t. 3. figg. 3 *a*, 3 *b* (1895)[1].

Total length, short-winged ♂ 11, ♀ 14–16; long-winged ♂ 12·8–13·5, ♀ 17–18: pronotum, short-winged ♂ 10·3–10·4, ♀ 13·2–14; long-winged ♂ 10·5–12, ♀ 15–16·2; post. fem., ♂ 5·6–7·3, ♀ 7·8–9; antennæ, ♂ 4, ♀ 4·5 millim.

Hab. Mexico, Atoyac in Vera Cruz, Teapa in Tabasco (*H. H. Smith*); Nicaragua (*coll. Bruner*[1]).

Of this species I have had the types for comparison, and I refer to it the four males and ten females obtained by Mr. H. H. Smith in Eastern Mexico, the only difference worthy of note being that in the Nicaraguan insects the hind femora, especially of the male, are distinctly smaller than in the others. It should be noted here that in the drawing of the lateral aspect of the female type (*loc. cit.*) the pronotum is represented too much arched longitudinally.

This is the largest species of the genus that I have seen from Central America and is noticeably dimorphic in wing-length.

4. **Tettigidea plagiata,** sp. n.

Antennæ filiform, very slender. Eyes scarcely subprominent. Vertex and crown distinctly convex, faintly excavated at the sides; vertex advanced, subangulate, a little wider than one of the eyes, the sides parallel, the mid-carina small, little produced backward. Facial costa narrow throughout, widest below. Pronotum convex-tectiform, arched longitudinally, the surface granulate, with faint, short, irregular rugulæ; the anterior margin advanced one-fourth its width, rounded angulate; mid-carina prominent, acute; lateral carinæ obsolete anteriorly, distinct behind the principal sulcus; scapular area reduced to a mere line; hind process long-subulate, passing posterior femora 1·8 millim., exceeded 1·4 millim. by the wings; lateral lobes with the upper sinus rather deeper than usual. Elytra large, long-elliptical, with an oblique subapical pale bar. Femora slender, the posterior pair with a narrow pale streak bounding the lower margin of the external pagina internally.

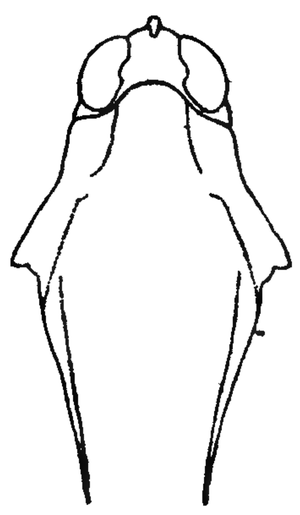
Total length, ♂, 13·5: pronotum, ♂, 11·8; post. fem., ♂, 6·4; antennæ, ♂, 3·5 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

One male. I have also seen two females, one from Cuernavaca, the other from Chilpancingo (*H. H. Smith*), which perhaps belong to this species, though they approach *T. nicaraguæ* rather closely, differing from it in being slightly smaller, with more arched pronotum and slenderer hind femora.

5. **Tettigidea parvula,** sp. n.

Antennæ slender, filiform. Vertex narrow, equal to, or barely as wide as, one of the eyes; mid-carina prominent. Facial costa prominent, narrowly sulcate, widest below. Pronotum punctate or smoothly granulate, with a few indistinct longitudinal rugulæ on the shoulders, the humero-apical carinulæ distinct, bounding a well-marked scapular area, which is widest at the humeral angles; hind process subulate. Elytra widest subapically, obliquely truncate at the apex, with a subapical oblique pale bar. Wings fully developed. Hind femora robust, margins of the apex but little concave.



Total length, ♂ 10·5, ♀ 12·5: pronotum, ♂ 8·5, ♀ 10; post. fem., ♂ 5, ♀ 6; antennæ, ♂ 3·5, ♀ 3·5 millim.

Hab. MEXICO, Cuernavaca in Morelos (*H. H. Smith*).

Two males and two females. This is the smallest and most slender species of *Tettigidea* known to me. It resembles *T. plagiata* in the general form of the body, but the hind femora are proportionally stouter, the facial costa is more prominent, the crown less elevated, the vertex narrower, and the size much less. It may possibly prove to be referable to *T. guatemalteca*, Bolivar.

6. **Tettigidea tecta,** sp. n.

Vertex horizontal, advanced before the eyes a distance equal to one-fourth its width, angulate, with subprominent mid-carina, which extends well backward; the lateral margins converging backward to its narrowest part just in front of the coronal lobes, where its width is one and a half times that of one of the eyes. Facial costa with upper and lower halves nearly equal in width. Pronotum distinctly tectiform, especially in the female; the anterior margin strongly advanced, one-third its width or a little more, parallel to the sides of the vertex, angulate at the apex; surface smoothly granulate; mid- and lateral carinæ prominent, with two to four irregular additional rugulæ; scapular area present, narrow; posterior sinus of the lateral lobes shallow; hind process abbreviated. Elytra rather small, long-elliptic, unmarked.

Wings absent. Femora stout, especially the posterior pair, in which the upper margin of the external pagina is distinctly convex and that of the femur itself straight.

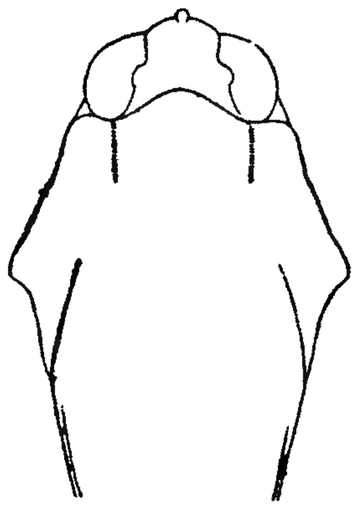
Total length, ♂ 9, ♀ 12·5: pronotum, ♂ 8·5, ♀ 11; post. fem., ♂ 5·5, ♀ 6·5 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

Two males and one female. This species resembles *T. prorsa*, from Georgia, but differs from it in the more angular front margin of the pronotum, wider vertex, more prominent eyes, and stouter hind femora.

7. **Tettigidea nigra,** sp. n.

Vertex and crown strongly convex above, a little less angulate in front than in *T. tecta*; the mid-carina smaller, less prolonged backward, barely reaching the level of the eyes. Facial costa narrowly sulcate, the upper part narrower, with parallel sides. Pronotum tectiform, mid-carina prominent, subcristiform; the surface smooth, finely granulate, the transverse sulci impressed; scapular area wanting or very nearly so; front margin rounded-angulate, advanced one-fourth to one-third its width; hind process abbreviated, not reaching the end of the femora; lateral lobes with the posterior sinus of usual size, sometimes a little shallow. Elytra of usual size and form, with a subapical oblique pale bar. Wings absent.



Colour black, except the face below the eyes, the apex of the pronotum, and the apex and venter of the abdomen; tibiæ and tarsi fasciated with fuscous.

Total length, ♂, 8·5–9: pronotum, ♂, 8–8·5; post. fem., ♂, 5·5–6·4 millim.

Hab. MEXICO, Xucumanatlan and Omilteme in Guerrero 7000 to 8000 feet (*H. H. Smith*).

Three males. In colour this species presents a notable exception (at least in the types) to the general reddish-brown hue prevalent in the genus.

8. **Tettigidea guatemalteca,** Boliv.

Tettigidea guatemalteca, Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 298 (1887) [1].

"Pallide grisea, fusco variegata; femoribus fusco-fasciatis. Vertice oculo angustiore, antice obtuse parum producto, medio carinato, a latere viso rotundato. Pronoto antice rotundato-subangulato, postice subulato apicem femorum vix superante; dorso sub-lævi, rugis longitudinalibus fere indistinctis; inter humeros convexiusculo, carina media parum elevata pallide fuscoque notata; carinis lateralibus prope marginem anticum perspicuis, curvatis, retrorsum divergentibus. Elytris lævibus, fuscis, extus pallidioribus, ante apicem macula obliqua pallida notatis; alis longe pone apicem pronoti extensis. Femoribus posticis minute granulatis: articulo primo tarsorum posticorum pulvillis inferne subrotundatis; tertio parum longiore.

"Long. corporis, ♀, 10 mm., pronoti 10·5 mm., fem. post. 6 mm.

"*Hab.* GUATEMALA [1].

"Chez cette espèce le pronotum est presque privé des carènes longitudinales irrégulières que l'on voit dans les autres espèces du genre. Par sa taille elle pourrait figurer entre *T. polymorpha*, Burm., et *T. lateralis*, Scudd."

SCARIA, Bol.

Scaria, Bolivar, Ann. Soc. Ent. Belg. xxxi. pp. 196, 301 (1887).

1. **Scaria hamata**, De Geer.

Acrydium hamatum, De Geer, Mém. des Ins. iii. p. 503, t. 42. fig. 13 (1773) [1].
Scaria hamata (De Geer), Bolivar, Ann. Soc. Ent. Belg. xxxi. p. 301 [2].
Scaria hamata (Serv.), Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. no. 3, p. 62 [3].

Hab. NICARAGUA, Los Sabalos River (*coll. Bruner* [3]).—GUIANA [1 2]; AMAZONS [2].

One male, "taken in a swamp upon aquatic vegetation along the Los Sabalos River, north-west from Castillo" (*Bruner*). Recorded elsewhere from Surinam Cayenne, and the Upper Amazon.

Subfam. *EUMASTACINÆ* *†.

If we are to judge from the material at hand, this very remarkable subfamily of locusts, which contains so many imitative forms, is very poorly represented in Mexico and Central America. Nevertheless, as the following table will show, some extremely interesting species are to be met with. In the genus *Teicophrys*, from Cape San Lucas, Lower California, we have a representative of the Old-World group with dilated frontal costa between the antennæ.

Owing to the comparatively small size and inconspicuous appearance of those forms with stick-like apterous bodies, they are apt to be overlooked by the general collector. Hence, a careful search made by specialists over the country from the Isthmus of Panama to the northern boundary of Mexico and in California will, no doubt, result in the addition of more genera and species.

For this reason, several of the allied genera and species known to inhabit Southern California or the northern parts of South America are enumerated, these being placed (as in Vol. I. of this subject) within square brackets.

Table of the genera of Eumastacinæ *inhabiting the middle portions of America.*

A. Frontal costa more or less dilated and flattened between the antennæ.
  b. Pronotum with the dorsum not tectiform, plain. Metatarsi of hind legs with both margins denticulate above.

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* Principal works referred to for this subfamily :—

BURR, MALCOLM, Essai sur les Eumastacides, pp. 96, pls. 3, Madrid: Anal. de la Soc. Esp. de Hist. Nat. t. xxviii (1899).

KARSCH, F., "Ueber die Mastaciden," Entomol. Nachrichten, xv. pp. 24–36 (1899).

GERSTAECKER, A. C., "Characteristik einer Reihe bemerkenswerther Orthoptera," Mittheilung. naturwiss. Vereins Neuvorpommern und Rügen, xix. & xx. (1888).

† = MASTACINÆ, *anteà*, p. 2.

c. Fastigium of the vertex horizontally produced or but slightly elevated, emarginate. Pronotum truncate or emarginate behind . . . . . [TEICOPHRYS, Bruner.]

AA. Frontal costa percurrent, very narrow between the antennæ, deeply sulcate throughout.

b. Basal joint of hind tarsi above with both margins spined or serrate. Body apterous.

c. Sulcation of the vertex not separated from that of the frontal costa by a transverse ridge. Valves of the ovipositor blunt, unequal in length, and without teeth or serrations . . . . GYMNOTETTIX, Bruner.

cc. Sulcation of the vertex separated from that of the frontal costa by a transverse ridge. Valves of the ovipositor acute at tip, strongly serrated . . . . . EPISACTUS, Brunner.

bb. Basal joint of the hind tarsi above with both margins smooth or at most provided with stiff hairs.

c. Legs long, the spines on the inner side of hind tibiæ alternately large and small. Tegmina and wings well developed or rudimentary.

d. Vertex rather narrow, neither compressed nor projecting in front of the eyes. Tegmina and wings present.

e. Tegmina hyaline, regularly veined; wings hyaline, not coloured . . . . . EUMASTAX, Burr.

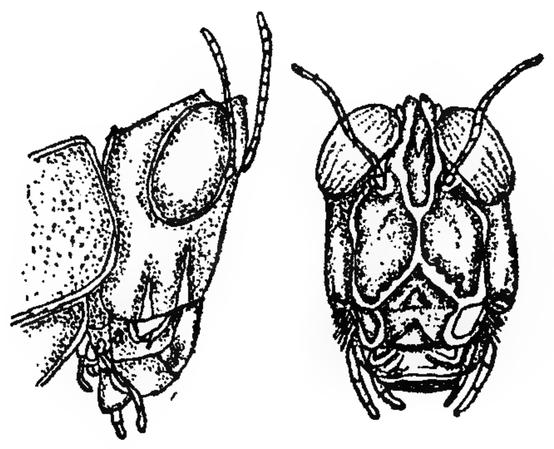
ee. Tegmina opaque, coloured, densely or irregularly veined; wings coloured . . . . . PARAMASTAX, Burr.

dd. Vertex moderately broad, horizontal, and projecting in front of the eyes. Tegmina and wings rudimentary . . . . . [MASYNTES, Karsch.]

cc. Legs shorter, the spines on the inner side of hind tibiæ of uniform size. Tegmina and wings absent or rudimentary . . . . . [MORSEA, Scudder.]

[TEICOPHRYS, gen. nov.

Body of moderate size, rather slender, and apterous; the pronotum short and inconspicuous, scarcely longer than either the meso- or metathoracic segments separately, and with a small median carina, the hind and front edges above truncate, slightly notched in the middle. Head short, the eyes only a trifle prominent, about as long as the cheeks below them; vertex gently ascending, bordered by well-defined lateral ridges which terminate in anteriorly projecting blunt points that reach beyond the front edges of the eyes, these points forming also the upper termini of the lateral walls of the frontal costa. There is also on each side at the back edge of the fastigium of the vertex a prominent tubercle, which marks the beginning of the carinæ just referred to. The flattened frontal costa of the face, which is continuous with the fastigium of the vertex, is bordered by rather prominent carinæ that diverge greatly to a point midway between the top and bottom of the eyes and then suddenly converge, so as to leave the costa only about one-half or a trifle more of its greatest width, from where they continue down the face parallel or nearly so to just below the ocellus, when they again bend abruptly inward and unite, forming a single ridge down the middle of the face almost to the clypeus, where it branches, sending out and downward on each side obliquely a carina that reaches and unites



with the lateral carina of the face, as indicated in the accompanying figure. Hind femora shorter than the abdomen, fairly stout, the upper carinæ provided with a number of rather strong spines; metatarsi with both margins denticulate above. Upper valves of the ovipositor more or less serrate, the lower ones provided with two coarse, blunt teeth back of the strongly curved apex. Antennæ normal.

The above-mentioned characters are based on an imperfect female specimen of *T. fusiformis* from the collection of Samuel H. Scudder and on two very immature alcoholic specimens belonging to the California Academy of Sciences. These latter, which were obtained by Gustav Eisen at San José del Cabo, Lower California, are doubtfully referred to a distinct species from the one described from the same region.

1. **Teicophrys fusiformis,** sp. n.

General colour in life presumably dull testaceous or olive-brown, with little variation in the form of lighter or darker brown lines and dots. The body is largest at the metathorax, and tapers gently both anteriorly and posteriorly, and is covered rather sparsely above with elevated points and ridges which range themselves into series that give the surface the appearance of being transversely wrinkled. These tubercles are largest on the thorax, but most numerous on the abdomen. The eyes show alternate light and dark streaks which are parallel to their anterior edges. There are also dark tips to the spines on the hind femora and the valves of the ovipositor.

Length of body (♀) 27: of pronotum 2·5; of hind femora 12 millim.

Hab. Lower California, Cape St. Lucas (*Palmer, in coll. Scudder*).]

GYMNOTETTIX, gen. nov.

A single female specimen of this subfamily of locusts before me differs so much from the characters given for *Episactus* and *Eumastax* that I have decided to place it in a separate genus. The following differences are the most important, together with those which are given in the above Table for separating the genera:—

Sulcation of the vertex separated by a transverse carina from that of the frontal costa (*Episactus*), not so separated (*Gymnotettix*). Basal joint of hind tarsi serrate above on both margins (*Gymnotettix*), basal joint of tarsi smooth (*Eumastax*).

Body slender; the pronotum small, truncate in front and slightly emarginate behind, the median carina distinct, linear. Head a little wider than the front edge of the pronotum, the vertex somewhat produced in advance of the eyes, where its lateral walls converge somewhat and continue as the lateral carinæ of the frontal costa. The latter about one-half as broad as the vertex between the eyes, deeply sulcate throughout and of nearly uniform width. Eyes less prominent than in *Eumastax*, about three-fifths as broad as long. Antennæ with the basal and second joints less enlarged than in that genus, 11-jointed. Hind femora about equalling the abdomen in length, comparatively heavy; the hind tibiæ irregularly spined—only partially showing the alternation of long and short spines,—the basal tarsal joints strongly toothed on both margins above. Ovipositor with the valves blunt, toothless, the lower pair considerably the shorter.

1. **Gymnotettix occidentalis,** sp. n.

General colour above dark olive-brown, with the sides of the pronotum and the tip of the abdomen reddish. Face and basal portion of hind femora lighter. Eyes shining, dark brown, with a narrow yellowish transverse median band. Apical portion of the hind femora, together with the tibiæ and tarsi, brownish-black.

Length of body (♀) 14: of pronotum 2·45; of hind femora 12 millim.

Hab. British Honduras, Rio Sarstoon (*Blancaneaux*).

EPISACTUS, Brunner.

Episactus, Brunner v. W., Ann. Mus. Civ. Gen. (2) xiii. p. 115 (1893); Burr, Essai sur les Eumastacides, p. 40 (1899).

1. **Episactus brunneri,** Burr. (Tab. II. figg. 15, 15 *a*, ♀; 16, 16 *a*, *b*, ♂.)

Episactus brunneri, Burr, Essai sur les Eumastacides, p. 40 (1899).

Hab. Guatemala (*coll. Brunner*).

EUMASTAX, Burr.

Mastax, Perty, Delect. Anim. Bras. p. 122 (1830); Blanch.; Serv.; Burm.; Stål; Brunner v. W.; Karsch; Gerst.

Eumastax, Burr, Essai sur les Eumastacides, p. 43 (1899).

Although but a single species of this genus has been taken in Central America or Mexican territory, five additional forms are recorded from the northern parts of Tropical South America, and are therefore likely also to occur in the State of Panama and northward. These insects may be separated by the following synoptic Table:—

A. Apex of the vertex above the eyes not visible when viewed from the side.
  b. Tegmina and wings fully developed.
    c. Posterior femora unicolorous, testaceous or olivaceous, the carinæ black, never indistinctly dusky spotted nor with transverse lines.
      d. Eyes unicolorous.
        e. Pronotum testaceous or ferruginous, marked with a black line on each side. Cerci of male incurved. Size small. Colour ferruginous, varied with black . . . . . [*tenuis*, Perty.]
        ee. Pronotum uniformly testaceous. Abdomen fuscous, the two penultimate dorsal segments bright red. Size small . . . [*poultoni*, Burr.]
      dd. Eyes bicolorous . . . . . [*semicæca*, Brunner.]
    cc. Posterior femora varicoloured or ornamented with transverse lines, towards the apex reddish. Abdomen testaceous, with a yellowish vitta on each side . . . . . *surda*, Burr.
  bb. Tegmina rudimentary, wings absent. Colour fuscous; the pronotum bright ferruginous, without a carina, the posterior ridge roundly emarginate; apex of abdomen ferruginous . . . . . [*rosenbergi*, Burr.]
AA. Apex of the vertex above the eyes visible when viewed from the side. Deflexed lobe of pronotum roundly angled in front . . . . . [*militaris*, Gerst.]

[1. **Eumastax tenuis,** Perty.

Mastax tenuis, Perty, Delect. Anim. Bras. p. 123, t. 24. fig. 3 (1830–1834); Serv.; Burm.; Walk.; Gerst.; Karsch.

Mastax virescens, Westw. Arcana Ent. i. p. 100.

Mastax minuta, Bol. An. Soc. Esp. x. p. 481 (1881); Karsch; Giglio-Tos.
Eumastax tenuis, Burr, Essai sur les Eumastacides, p. 45 (1899).

Hab. Ecuador (*Bolivar, Giglio-Tos, &c.*); Peru (*Gerstaecker*); Brazil (*Perty, Serville, &c.*).]

[2. **Eumastax poultoni**, Burr.
Eumastax poultoni, Burr, Essai sur les Eumastacides, p. 47 (1899).

Hab. Colombia (*Mus. Oxon.*).]

[3. **Eumastax semicæca**, Brunner.
Mastax semicæcus, Brunner v. W., Obs. on the Colours of Ins. p. 15, fig. 118 (1897).
Eumastax semicæca, Burr, Essai sur les Eumastacides, p. 48 (1899).

Hab. Upper Amazons (*coll. Brunner v. W.*).]

4. **Eumastax surda**, Burr. (Tab. II. figg. 14, 14 *a*, ♀.)
Eumastax surda, Burr, Essai sur les Eumastacides, p. 50 (1899).

Hab. Panama, Chiriqui (*coll. Brunner v. W.*), Bugaba (*Champion*).—Peru (*coll. Brunner v. W.*).

The Bugaba specimen was first determined as *E. collaris* (Gerst.), but later referred as above.

[5. **Eumastax rosenbergi**, Burr.
Eumastax rosenbergi, Burr, Essai sur les Eumastacides, p. 52 (1899).

Hab. Colombia (*coll. Burr*).]

[6. **Eumastax militaris**, Gerst.
Mastax militaris, Gerst. Mitth. Neuvorp. Rügen, 1888, p. 84; Karsch.
Eumastax militaris, Burr, Essai sur les Eumastacides, p. 53 (1899).

Hab. Amazons (*coll. Brunner v. W.*).]

PARAMASTAX, Burr.

Paramastax, Burr, Essai sur les Eumastacides, p. 54 (1899).
Mastax, Scudder; Gerstaecker; Bolivar; Karsch.

1. **Paramastax magna**, Giglio-Tos.
Mastax magna, Giglio-Tos, Boll. Mus. Tor. xiii. no. 311, p. 57 (1899).
Paramastax magna, Burr, Essai sur les Eumastacides, p. 57.

Hab. Mexico (*coll. Brunner v. W.*).—Ecuador, Santiago (*Giglio-Tos*).

[MASYNTES, Karsch.

Masyntes, Karsch, Ent. Nachr. xv. pp. 26, 31 (1889); Brunner v. W., Rev. Orth. p. 115 (1893).
Mastax, Scudder; Bolivar (nec Perty, De Haan, Stål).

Table for separating the Species.

A. Fastigium of the vertex emarginate at the apex. Wings present. Antennæ unicolorous, testaceous . . . . . *gundlachi*, Scudd.

AA. Fastigium of the vertex rounded. Wings absent. Antennæ brown, the basal joint yellow . . . . . *mutilata*, Serv.

1. **Masyntes gundlachi**, Scudd.

Mastax gundlachi, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 262 (1874–75); Bolivar, Enum. Ins. Orth. de l'île de Cuba, in Mém. Soc. Zool. Fr. 1888, p. 26.
Masyntes gundlachi, Karsch, Ent. Nachr. xv. p. 31 (1899).

Hab. CUBA (*Scudder*, *Bolivar*, *Brunner*).

While the West-Indian Islands are not exactly a part of the country embraced by this work, in the present and several other instances certain insects are introduced on account of their close relationship to Central-American forms, or else because of their special interest to the student in his investigations along faunal lines.

2. **Masyntes mutilata**, Serv.

Mastax mutilata, Serv. Hist. Orthopt. p. 751, t. 8. fig. 4 (1839); Karsch, &c.
Masyntes mutilata, Burr, Essai sur les Eumastacides, p. 8 (1899).

Hab. COLOMBIA (*Serville*).

The description of *M. mutilata* is so incomplete that it is difficult to compare the insect with others without having specimens at hand for the purpose. Even Mr. Malcolm Burr does not seem to have decided definitely anything about it, since he has left *M. mutilata* out of his table for separating the species of the genus, although on p. 8 of his 'Essai' he has referred it to *Masyntes*.]

[MORSEA, Scudder.

Morsea, Scudder, Psyche, viii. p. 179 (1898); Burr, Essai sur les Eumastacides, p. 63 (1899).

Morsea, as indicated by the above table for the separation of the genera, approaches most closely to *Masyntes*, which is found in Cuba and over a considerable portion of Tropical South America. It differs from that genus, however, in having shorter legs, and in the spines of the inner side of the hind tibiæ being equal, instead of alternately long and short. From *Episactus*, Brunner, which also has the sulcus of the vertex separated from that of the frontal costa by a transverse ridge, it may be known by the basal joint of the hind tarsi being smooth above, instead of toothed. Thus far, but a single species has been recorded.

1. **Morsea californica,** Scudder.

Morsea californica, Scudd. Psyche, viii. p. 179 (1898); Burr, Essai sur les Eumastacides, p. 64 (1899).

Hab. UNITED STATES, Cahon Pass, Southern California, and Mt. Wilson, Altadina, near Los Angeles, California (*Morse*).]

Subfam. *TRYXALINÆ**.

This subfamily of short-horned grasshoppers or locusts is exceedingly well represented in the region embraced between the United States and the Isthmus of Panama. In studying the material that has been brought together for this purpose, along with such literature as deals with other forms inhabiting the district, it is found that upwards of forty genera and about one hundred species are to be considered. The study of such a large number of forms permits the writer, in a measure at least, to revise some of the recent work of others, since intermediate forms have been found which show better the relationships and location of certain genera that heretofore seemed obscure or uncertain. A few South-American genera have been found to occur within our North-American faunal areas, while several entirely new ones are now added.

Many of the forms characterized by Saussure and Walker were so inadequately described that their recognition is rather uncertain. Especially is this true as regards Walker's species belonging to genera like *Orphulella* and its allies, where the specific differences are slight, and where the characters used to separate them differ from those mentioned when they were first characterized. In Saussure's case, however, the difficulty has been removed in a measure, since a number of the types are at hand for comparison.

* Principal works referred to for this subfamily:—

BRUNER, L., A Brief Account of the Genera and Species of Locusts or Grasshoppers of Argentina, together with Descriptions of new Forms, pp. 21–42 (1900).

BRUNNER v. WATTENWYL, C., Révision du Système des Orthoptères, pp. 117–123 (1893).

GIGLIO-TOS, E., Bollettino dei Musei di Zool. ed Anat. comp. di Torino, no. 184, vol. ix. (1894).

MCNEILL, JEROME, Revision of the Truxalinæ of North America (1897).

SAUSSURE, HENRI DE, Rev. et Mag. Zool. vol. xiii. (1861).

SCUDDER, S. H., "A Preliminary Classification of the Tryxalinæ of the United States and Canada," Psyche, vol. viii. pp. 231–239 (July, 1898).

SCUDDER, S. H., "Studies of N. A. Tryxalinæ," Proc. Amer. Acad. Arts and Sciences, vol. xxxv. pp. 42–57 (Aug. 1899).

SCUDDER, S. H., "The North-American Species of *Orphulella*," Canad. Ent. vol. xxxi. pp. 177–188 (1899).

STÅL, C., Recensio Orthopt. i. pp. 87–94 (1873).

STÅL, C., Observations Orthoptérologiques, ii. pp. 41–43 (1876).

WALKER, FRANCIS, Cat. Dermapt. Salt. Brit. Mus. iv. (1870).

Synopsis of the Genera.

A. Foveolæ of the vertex invisible from above or wanting, their plane forming a right or acute angle with the plane of the fastigium; face, as a rule, much more oblique than in the alternate category.

b. Sides of the fastigium strongly rounded, the apex not acuminate; antennæ ensiform; tegmina acuminate or angulate at base; apical angles of posterior femora horizontally produced, acuminate.

c. Fastigium of the vertex greatly produced, as long as or longer than the eye, its sides on the basal half subparallel; face excessively oblique, the eyes nearly longitudinal.

d. Foveolæ of the vertex absent; tegmina much abbreviated, spines on outer margin of hind tibiæ numerous, about 25; subgenital plate of male abdomen greatly lengthened . . . . . RHADINOTATUM, McNeill.

dd. Foveolæ of the vertex narrow, elongate; tegmina passing the tip of abdomen; spines on outer margin of hind tibiæ less numerous, about 16; subgenital plate of male abdomen only moderately elongate . . . . . ACHURUM, Saussure.

cc. Fastigium of the vertex subtriangular, not greatly produced, distinctly shorter than the eyes, the sides converging from the base; face less oblique, the eyes distinctly oblique.

d. Larger, general colour green . . . . . METALEPTEA, Brunner.

dd. Smaller, general colour testaceous or ferruginous . . . [ORPHULA, Stål.]

bb. Sides of the fastigium straight or but gently rounded, the apex more or less acuminate, tegmina apically rounded or obliquely truncate; apical angles of posterior femora roundly deflexed.

c. Hind tibiæ armed with numerous spines on outer margin, numbering 12–20, usually 16–20.

d. Antennæ long and ensiform; prosternum with a distinct tubercle; lateral carinæ of pronotum wanting or developed, diverging but little when present.

e. Lateral carinæ present; hind tibiæ with 18–20 spines in outer row . . . . . MERMIRIA, Stål.

ee. Lateral carinæ wanting; hind tibiæ with 12–15 spines in outer row . . . . . PAROPOMALA, Scudder *.

dd. Antennæ shorter, filiform or more or less flattened

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* Scudder places this genus in the subfamily Acridiinæ, close to *Leptysma*; but, according to the writer's judgment, it should be included with the Tryxalinæ. For a further discussion of the matter, *vide infrà*.

basally; prosternum without tubercle; lateral carinæ well developed, considerably diverging posteriorly.

e. Fastigium of the vertex acuminate, without longitudinal carina; tegmina considerably surpassing tip of abdomen, without regular transverse veins in discal area and on costal margin; antennæ with the basal joints depressed . . . . . PAPAGOA, Bruner.

ee. Fastigium of the vertex somewhat obtuse, with longitudinal carina; tegmina but little surpassing tip of abdomen, with regular transverse veins in discal area and on costal margin; antennæ filiform, but little flattened basally . . . . . SYRBULA, Stål.

cc. Hind tibiæ armed with fewer spines on outer margin, rarely numbering as many as 15, usually only 10–12.

d. Radial veins in apical third of wing (♂) normal, not constricted nor especially incrassate, the discoidal field not fenestrate.

e. Head usually more or less conical, ascending, sometimes strongly; eyes generally prominent; upper portion of the frontal costa produced so that the front when seen laterally is more or less sinuate or angulately bent inward at the ocellus; wings usually banded or highly coloured. (ACROLOPHITI.)

f. Head, when viewed laterally, strongly ascending; face below ocellus subperpendicular; antennæ more than half as long as the tegmina; metazona distinctly elevated above the prozona, tumid or crested.

g. Metazona much longer than prozona, with an elevated but tumid crest . . . . . ACROLOPHITUS, Thomas.

gg. Metazona but little longer than prozona, tumid, but with only a slight carina . . . . . ACROCARA, Scudder.

ff. Head, when viewed from the side, with scarcely ascending vertex; face below ocellus distinctly though not greatly oblique; antennæ less than half as long as tegmina; metazona not or barely elevated above the prozona, feebly tumid at most.

g. Antennæ much longer than the face; lower margin of lateral lobes of pronotum anteriorly excised, broadly exposing the pleura; basal half of tegmina rather densely reticulate, the intercalary vein obscure . . . . . MACHÆROCERA, Saussure.

gg. Antennæ shorter than the face; lower margin of lateral lobes of pronotum nearly horizontal throughout, scarcely exposing the pleura; only

the extreme base of the tegmina densely reticulate, the intercalary vein distinct . . . . . GYMNES, Scudder.

ee. Head obscurely or not at all conical; never, unless very feebly, ascending; eyes seldom prominent; face as seen from the side straight throughout or uniformly rounded, never angularly bent inward at the ocellus; wings, as a rule, clear or apically faintly fuliginous.

f. Head somewhat ascending; antennæ of very unequal length in the two sexes; pronotum with no lateral carinæ, the median carina obsolete on the prozona; scapular area of ♂ tegmina conspicuously expanded so as to make the costal margin sinuate . . . . BOÖTETTIX, Bruner.

ff. Head generally salient, rarely at all ascending; antennæ subequal in the two sexes; scapular area of ♂ tegmina slightly or not at all expanded.

g. Antennæ distinctly flattened (save in *Amblytropidia*), generally rather short; fastigium of vertex usually rounded and without distinct lateral costulation, or, if distinct, then with a distinct median carina, generally continuing over the occiput, where it is sometimes accompanied by a pair of submedian carinæ; face rather strongly oblique; lateral carinæ of pronotum usually parallel, sometimes converging mesially but without any or only the faintest constriction of the body of the pronotum.

h. Disk of pronotum more or less clepsydral, the lateral carinæ converging near the middle.

i. Apical spurs on inner side of hind tibiæ very unequal in length.

j. Antennæ apically clavate; lateral carinæ of pronotum subparallel; tegmina generally as long as the abdomen . . . . . ERITETTIX, Bruner.

jj. Antennæ apically attenuate, though blunt; lateral carinæ of pronotum considerably arcuate; tegmina abbreviate.

k. Hind margin of pronotum angulate or rotundo-angulate; prozona but little longer than metazona . . . . . MESOCHLOA, Scudder.

hh. Disk of pronotum equal or subequal, the lateral carinæ being strictly parallel or diverging only (and slightly) on the metazona.

i. Scapular area of tegmina in both sexes somewhat dilated, subhyaline, regularly areolate with oblique veinlets.

j. Antennæ nearly or quite as long as hind femora, somewhat flattened at the base; lateral carinæ of pronotum wanting, the supplemental carinæ present . . . . . OCHROTETTIX, Bruner.

jj. Antennæ much shorter than hind femora, filiform or gently ensiform; lateral carinæ present, the supplemental carinæ sometimes wanting.

k. Antennæ feebly clavate in ♂, depressed but not basally expanded in ♀; supplemental subdorsal carinæ on pronotum present; tegmina and wings complete . AMPHITORNUS, McNeill.

kk. Antennæ apically acuminate in ♂, basally expanded so as to be subensiform in ♀; no supplementary carinæ on pronotum; tegmina and wings usually abbreviated . OPEIA, McNeill.

ii. Scapular area of tegmina in both sexes not at all dilated, and of the same density as the other areas . . . . . AMBLYTROPIDIA, Stål.

gg. Antennæ but little or not at all flattened, filiform, generally long; fastigium more or less excavate, or, if rotundate, with distinct lateral costulation; no median carina on the head unless the fastigium is deeply sunken, with high margins; no supplementary carinæ; face usually subvertical; lateral carinæ of the pronotum strongly converging mesially, the pronotum being constricted mesially. (PHLIBOSTROMÆ.)

h. Face quite strongly oblique; eyes oblique; scapular area of tegmina in both sexes broader apically than basally; prozona much longer than metazona, the latter subtruncate posteriorly . ALPHA, Brunner.

hh. Face subperpendicular; eyes subvertical; scapular area of tegmina in both sexes broader basally than apically; prozona and metazona of subequal length, the latter angulate posteriorly.

i. Antennæ much longer than head and pronotum together; no median carina on head, except sometimes posteriorly; interspace between the eyes as broad as the narrowest part of pronotal disk; longest hind tibial spur scarcely longer than last tarsal joint . . . . . PHLIBOSTROMA, Scudder.

dd. Radial veins in apical third of wings of ♂ incrassate and constricted, the discoidal field fenestrate.

e. Antennæ relatively short, at most but little longer than

the head and pronotum together; fastigium of the vertex without a median carina; scapular area of the tegmina not specially dilated.

f. Tegmina obliquely truncate at apex.

g. Sides of the vertex more or less evenly rounded, so as to render the fastigium blunt rather than angulate; lateral foveolæ very obscure; antennæ basally much depressed in both sexes, ensiform; lateral carinæ of pronotum straight or but gently diverging posteriorly . . . . . [ORPHULA, Stål *.]

gg. Sides of vertex straight, rendering the fastigium angulate; lateral foveolæ more or less evident, linear to sublinear; antennæ basally less depressed, scarcely ensiform even in the female; lateral carinæ of pronotum considerably diverging posteriorly . . . . . THYRIPTILON, Bruner.

ff. Tegmina more or less evenly rounded at apex.

g. Lateral carinæ of pronotum less prominent than the median, more or less divergent, especially on metazona; prozona and metazona about equal in length; the lateral lobes deeper than long.

h. Lateral carinæ nearly or quite as well developed on the prozona as on the metazona; eyes more or less truncate anteriorly.

i. Antennæ longer, somewhat exceeding the combined length of head and pronotum, filiform; the apical half or two-thirds (?) of tegmina membranous; wings usually more or less coloured and decidedly infuscated.

j. Tegmina rather broad; wings more or less evenly tinged with yellow or orange on basal portion, apically infuscated. Pro- and metazona of pronotum of equal length? . . . SISANTUM, Bruner.

jj. Tegmina narrow; wings fuscous, the anterior margin apically black-bordered. Pronotum with the prozona a little longer than the metazona . . . . . ORPHULINA, Giglio-Tos.

ii. Antennæ shorter, but little or not at all exceeding the combined length of the head and pronotum; the apical third only of tegmina membranous; wings clear or but little infuscated.

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* This genus does not appear to be represented in that portion of America covered by this work, but is introduced here to show its relationships. I cannot agree with Scudder and others as to the position occupied by it (see my paper on "Locusts of Argentina"; also *anteà*, p. 26).

j. Posterior tibiæ with fewer (10–11) spines in outer row; tegmina without a decided humeral vitta; eyes of median size, somewhat bulging . . . . . ORPHULELLA, Giglio-Tos.

jj. Posterior tibiæ with more (13–14) spines in outer row; tegmina with a decided humeral vitta; eyes rather large, but feebly bulging. PARACHLOEBATA, Saussure (MS.).

hh. Lateral carinæ but feebly developed on the prozona when compared with those on the metazona; eyes subglobular, large . . . . LINOCERATIUM, Bruner.

gg. Lateral carinæ of pronotum quite or nearly as prominent as the median, straight or but little divergent posteriorly; the prozona decidedly longer than the metazona; the lateral lobes fully as long as, or longer than, deep.

h. Lateral lobes of pronotum slightly tumid in descending by the obliquity of the upper portion; the lateral carinæ very gently divergent on metazona; discoidal field of wings of ♂ distinctly narrowing apically . . . . . CLINOCEPHALUS, Morse.

hh. Lateral lobes of pronotum plane, vertical; lateral carinæ parallel on metazona as on prozona; discoidal field of wings of ♂ hardly narrowing apically . . . . . DICHROMORPHA, Morse.

ee. Antennæ long, about or more than half as long again as head and pronotum together; fastigium of vertex furnished with a distinct median carina.

f. Scapular area of tegmina not broad and not regularly reticulate with oblique veins; anterior portion of wing of ♂ broadly and regularly fenestrate (reminding one of the elytron of a male *Œcanthus*); spines on outer edge of hind tibiæ about ten in number . PHANEROTURIS, Saussure (MS.).

ff. Scapular area of tegmina rather broad and regularly reticulate with oblique veins; wings of ♂ somewhat aborted, the anterior portion not fenestrate; spines on outer edge of hind tibiæ about 14 in number . CHLOËALTIS, Harris.

AA. Foveolæ of the vertex always present, visible from above, their plane forming an obtuse angle with the plane of the fastigium; face usually more nearly vertical than in the alternate category.

b. Tegmina with ill-formed intercalary vein.

c. Inner apical spurs of hind tibiæ subequal in length; apical portion of scapular field of ♂ tegmina (and sometimes the adjoining parts) so dilated that the broadest part of the tegmina lies beyond the middle.

d. Antennæ not apically clavate.

e. Face considerably oblique, straight or but little rounded; lateral foveolæ of vertex linear or triangular; lateral lobes of pronotum longer than or fully as long as deep.

f. Fastigium with a distinct percurrent median carina; antennæ, at least in female, depressed and more or less expanded basally.

g. Antennæ much expanded basally, tapering; lateral carinæ of pronotum subparallel, the disk subrectangular . . . . . NAPAIA, McNeill.

gg. Antennæ feebly expanded basally, subfiliform; lateral carinæ of pronotum strongly sinuate, the disk clepsydral.

h. Tegmina and wings fully developed, reaching beyond tip of abdomen; antennæ much shorter than hind femora; longitudinal carinæ of fastigium continued upon the occiput; eyes piriform, not prominent . . . . . HORESIDOTES, Scudder.

hh. Tegmina much abbreviated, scarcely half as long as abdomen; antennæ nearly or quite as long as hind femora; longitudinal carinæ of fastigium not continued upon the occiput; eyes subglobular, prominent . . . . . MELANOTETTIX, Bruner.

ff. Fastigium with no median carina, but at most a coloured line, except sometimes in the extreme anterior portion; antennæ filiform, the basal joints neither expanded nor greatly depressed in either sex. STENOBOTHRUS, Fischer.

ee. Face little oblique, strongly rounded; lateral foveolæ of vertex moderately wide, never more than twice as long as broad; lateral lobes of pronotum deeper than long.

dd. Antennæ apically clavate . . . . . GOMPHOCERUS, Thunberg.

cc. Inner apical spurs of hind tibiæ usually very unequal in length, the inferior twice or nearly twice as long as the superior; apical portion of scapular field of ♂ tegmina but little dilated, so that the broadest part of the tegmina lies at the middle. (SCYLLINÆ.)

d. Median carina of pronotum as distinct on prozona as on metazona, cut only by the principal sulcus.

e. Fastigium of the vertex without or with suppressed lateral ridges; the head usually large and lacking sharp carinæ; tegmina and wings never complete: insects rather large, above the average in size . . . BOÖPEDON, Thomas.

ee. Fastigium of the vertex with distinct lateral ridges;

the head variable, but never so smooth as in the preceding forms: insects of moderate or small size (except *Plectrotettix*).

f. Eyes elongate, nearly twice as long as broad; frontal costa broad, advanced in front of the eyes by more than half the shorter diameter of the latter; tegmina with definite pantherine pattern . . . . . PLECTROTETTIX, McNeill.

ff. Eyes suborbicular, much less than half as high again as broad, frontal costa not prominent, advanced in front of the eyes by less than half the shorter diameter of latter; tegmina irregularly and obscurely flecked.

g. Pronotum subtruncate posteriorly, the prozona much longer than the metazona; tegmina and wings abbreviate.

h. Head unusually large; pronotum much constricted in middle, the lateral carinæ well developed . . . . . EUPNIGODES, McNeill.

hh. Head not unusually large; the pronotum but little constricted in middle, the lateral carinæ almost obliterated . . . . . ZAPATA, Bruner.

gg. Pronotum more or less angulate posteriorly, the prozona and metazona equal or subequal; tegmina and wings fully developed.

h. Pronotum constricted in the middle, the prozona slightly the shorter; lateral carinæ percurrent, more or less divergent in front and strongly divergent behind.

i. Foveolæ of vertex visible from above only on the inner half; lateral carinæ of pronotum anteriorly but little or at least not strongly divergent, being gently arcuate on the prozona; lateral lobes of prozona feebly or not marked above the middle with obliquely disposed short lunate carinules . . . . . PSOLOESSA, Scudder.

ii. Foveolæ of vertex visible from above throughout their length; lateral carinæ of pronotum very strongly divergent in front as well as behind, being strongly bent-arcuate on the prozona; lateral lobes of prozona more or less conspicuously rugose-carinate obliquely above the middle . . . . . STIRAPLEURA, Scudder.

hh. Pronotum not constricted in the middle, the prozona slightly the longer; lateral carinæ obsolete on the prozona, moderately divergent behind . . . . . AGENEOTETTIX, McNeill.

dd. Median carina subobsolete posteriorly on the prozona, cut by its sulci, as well as by the principal sulcus . . AULOCARA, Scudder.

bb. Tegmina with distinct intercalary vein, which is slender and intermediate between the radial and ulnar veins; mediastinal veins of ♂ short, not reaching middle of tegmina, the scapular area beyond it dilated, scalariform-veined; median carina of pronotum distinct, sharp . . . LIGUROTETTIX, McNeill.

RHADINOTATUM, McNeill.

Tryxalis, Thomas, Rep. U.S. Geol. Surv. v. p. 58, tab. fig. 12 (1873).

Achurum, Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. p. 865 (1875); Scudder, Proc. Bost. Soc. Nat. Hist. xix. p. 88 (1877).

Rhadinotatum, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 200, 201 (1897).

1. **Rhadinotatum brevipenne,** Thomas.

Tryxalis brevipennis, Thomas, Rep. U.S. Geol. Surv. v. p. 58, tab. fig. 12 (1873) [1].

Achurum brevipenne, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 88 (1877) [2].

Rhadinotatum brevipenne, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 200, 201, t. 1. figg. 1 *a*, 1 *b*, (1897) [3].

Hab. NORTH AMERICA, Florida [1–3].—MEXICO, Orizaba.

This insect is included here on the authority of a record made at the time when several nymphs and a single male specimen were captured in the vicinity of Orizaba, Mexico, by the present writer, in 1887. It was seen again in 1893, at the same place, by Herbert Osborn, of the University of Ohio. The examples collected by myself cannot now be found. The species has been repeatedly met with in Florida.

ACHURUM, Saussure.

Truxalis (*Achurum*), Saussure, Rev. et Mag. Zool. 1861, p. 313; Orthopt. Nova Amer. ii. p. 16 (1861).

Achurum, Walker, Cat. Dermapt. Salt. Brit. Mus. iii. p. 518 (1870); Stål, Recens. Orthopt. i. p. 89 (1873); Brunner, Rev. Syst. Orthopt. p. 118 (1893).

This genus is represented by two recognized species, which may be separated thus:—

a. Disc of dorsum of pronotum alutaceo-rugose . . . . . 1. *sumichrasti,* Sauss.

b. Disc of pronotum with the front and hind lobes obsoletely punctate . . 2. *acridodes,* Stål.

1. **Achurum sumichrasti,** Sauss. (Tab. I. fig. 6, ♂.)

Truxalis (*Achurum*) *sumichrasti,* Sauss. Rev. et Mag. Zool. 1861, p. 313 [1]; Orthopt. Nova Amer. ii. p. 16 [2].

Achurum sumichrasti, Walker, Cat. Dermapt. Salt. Brit. Mus. iii. p. 518 [3].

Hab. NORTH AMERICA, Fort Grant, Arizona (*coll. Bruner*: ♂ ♀).—MEXICO [1] [2], Chilpancingo and Amula in Guerrero (*H. H. Smith*: ♂ ♀), Guadalajara (*Schumann*: ♀), Vera Cruz (*Sallé, in coll. Scudder*: ♂), Orizaba.

Saussure's type is a male.

2. **Achurum acridodes,** Stål.

Truxalis acridodes, Stål, Œfv. Vet.-Akad. Förh. xxx. 4, p. 52 (1873) [1].

Achurum acridodes, Stål, Recens. Orthopt. i. p. 101 (1873) [1]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. p. 865 (1875) [2].

Hab. MEXICO [1].

Whether or not this species is distinct from the preceding remains to be seen. The collections contain no specimens that cannot be referred to *A. sumichrasti.*

TRUXALIS, Fabricius *.

Truxalis, Fabr. Syst. Ent. p. 279 (1775) (part.); Burm. Handb. Ent. ii. p. 606 (1838) (part.); Stål, Recens. Orthopt. i. p. 92 (1873); Morse, Psyche, vii. p. 325 (1896).

Metaleptea, Brunner, Rev. Syst. Orthopt. p. 118 (1893).

This genus of locusts is confined to the American continent, where it is very widely distributed. Specimens are before me from localities as far north in the United States as the great lakes, and from as far south as the Rio Colorado in Argentina. The variation in the general appearance among individual specimens found in different localities is evident from the number of specific names that have been proposed by various writers. Whether there is sufficient grounds for separating these dissimilar forms inhabiting widely separated localities is a question which I am not prepared to answer at present; it may be stated, however, that recent writers have referred them to one species. The following rather extensive synonymy will show the confusion which has existed in the past with reference to the representatives of this genus as here limited.

1. **Truxalis brevicornis,** Linn.

Gryllus brevicornis, Linn. Cent. Ins. Rar. p. 15 (1763) [1]; Amœn. Acad. vi. p. 398 (1763) [2]; Syst. Nat. 12th ed. ii. p. 692 (1767) [3]; Turt. Syst. Nat. Linn. ii. p. 542 (1806) [4].

Truxalis brevicornis, Fabr. Syst. Ent. p. 279 (1775) [5]; Thunb. Mém. Acad. St. Pétersb. v. p. 264 (1815) [6]; Stål, Recens. Orthopt. i. p. 104 (1873) [7].

Tryxalis brevicornis, Burm. Handb. Ent. ii. p. 607 (1838) [8]; Morse, Psyche, vii. p. 325 (1896) [9]; Scudder, Proc. Dav. Acad. Nat. Sci. viii. p. 19 (1900) [10].

Pyrgomorpha brevicornis, Thomas, Syn. Acrid. N. Amer. p. 68 (1873) [11].

Metaleptea brevicornis, Giglio-Tos, Boll. Mus. Zool. Univ. Tor. xii. no. 301, p. 1 (1897) [12]; Bruner, Sec. Rep. Merchant's Locust Invest. Comm. B. A. p. 23 (1900) [13].

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* The characters of this genus are given in the Synopsis (*anteà*, p. 26) under the name *Metaleptea.*

Acridium ensicornum, De Geer, Mém. Ins. p. 449, t. 42. figg. 1, 2 (1773) [14]; Goeze, in De Geer's Gesch. Ins. iii. p. 325, t. 42. fig. 7 (1780) [15].

Opsomala punctipennis, Serv. Hist. Nat. Ins. Orthopt. p. 590 (1838) [16]; Thomas, Trans. State Agr. Soc. Illinois, p. 447 (1865) [17].

Opomala punctipennis, Thomas, Syn. Acrid. N. Amer. p. 197 (1873) [18].

Pyrgomorpha punctipennis, Thomas, Syn. Acrid. N. Amer. p. 68 (1873) [19].

Truxalis notochlora, Pal. de Beauv. Ins. Afr. et Amér. p. 80, t. 3. fig. 3 (1807) [20].

Metaleptea (*Tryxalis*) *notochloris*, Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. t. 3. fig. 63 (1895) [21].

Truxalis viridula, Pal. de Beauv. Ins. Afr. et Amér. p. 81, t. 3. fig. 4 (1807) [22].

Truxalis adspersa, Blanch. Voyage dans l'Amér. Mérid. vi. 2, p. 216, t. 27. fig. 2 (1837–1843) [23].

Oxycoryphus burkhartianus, Sauss. Rev. et Mag. Zool. 1861, p. 315 [24]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 786 (1870) [25]; Thomas, Syn. Acrid. N. Amer. p. 202 (1873) [26].

Hab. NORTH AMERICA, United States [14 16].—MEXICO [24], Minas Viejas (*Dr. Palmer, coll. Scudder*), Orizaba (*H. H. Smith, Godman*), Atoyac, Teapa (*H. H. Smith*), Jalapa and San Rafael in Vera Cruz (*Barrett & Townsend, in coll. Bruner*); NICARAGUA (*Shimek, coll. Bruner*), Chontales (*coll. Scudder*); COSTA RICA, Caché (*Rogers*), Puerto Limon (*Crawford & Carriker, coll. Bruner*).—COLOMBIA; BRITISH GUIANA; BRAZIL; PARAGUAY; ARGENTINA; ANTILLES, San Domingo [20 22].

Besides these records, there are numerous others which indicate that the insect is well distributed over the various countries of both North and South America lying between the latitudes of 40° on either side of the Equator, but more especially eastward.

There are many specimens of it in my own collection and in that of the Carnegie Museum at Pittsburg. The type of *O. burkhartianus*, Sauss., is before me as I write, and it simply bears the label "Mexique."

[ACANTHERUS, Scudder.

Acantherus, Scudder, Proc. Dav. Acad. Nat. Sci. ix. pp. 22, 23 (1902).

Since the synopsis of genera (*anteà*, pp. 26–34) was prepared, an additional genus belonging to the Tryxalinæ has come to light. It was described by Samuel H. Scudder in a treatise on "New Mexican Orthoptera." As the insect upon which it is based occurs in a region quite close to the southern boundary of New Mexico, where many other Mexican locusts are found, it seems best to include it here. Scudder's descriptions of both genus and species are given below *.]

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* ACANTHERUS, Scudder.

"Body rather elongate, compressed. Head shorter than the pronotum, a little protuberant, feebly ascending, broader below than above, apically blunt; vertex nearly plane, the fastigium brief, roundly subtriangular, projecting less than its width beyond the eyes, without distinct median carina; eyes moderate, elongate-elliptical, subvertical, slightly less oblique than the face; frontal costa very narrow, rather prominent,

MERMIRIA, Stål.

Mermiria, Stål, Recens. Orthopt. i. p. 102 (1873).

The insects which have been separated from the remainder of the Tryxalinæ under the generic name *Mermiria*, Stål, are among the most conspicuous North-American locusts. They occur chiefly in the arid portions of Northern Mexico and the adjoining regions of the United States. Several species, however, are much more widely distributed, and frequent localities as far distant as the New England States and even the adjoining Canadian territory. Most of them are partial to open country, where they make their homes among bunch grasses, although two or three of them also occur in sparsely timbered districts. They prefer sandy hill-sides and knolls to flat country, and become much more plentiful on grounds that have not been burnt over for several years. Most of the species are variable in colour, but their structural features are more permanent.

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feebly broadening below, straight when viewed obliquely; lateral foveolæ invisible from above, very broad triangular, rather obscure, the apex of the triangle in the middle above; antennæ half as long as the tegmina, depressed, triquetral, at least basally, slender throughout and uniformly tapering. Pronotum rather long, the dorsum nearly plane, the lateral lobes nearly vertical, the median carina distinct but slight, the lateral carinæ forming rounded shoulders, subparallel and not very distant on the prozona, gently divergent on the metazona; prozona distinctly longer than the metazona; lateral lobes a little inflexed above, longer than high, the front and hind margins subparallel in lower half. Prosternum with a transverse quadrangular blunt boss; mesosternal lobes separated by a quadrate space considerably narrower than the lobes themselves, the metasternal lobes by a space half as wide. Tegmina and wings reaching the tip of the abdomen, both slender, the latter unusually so. Hind legs slender, the femora reaching the tip of the abdomen, the tibiæ with about fifteen spines on outer row."

1. **Acantherus piperatus,** Scudder.

Acantherus piperatus, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 23, t. 3. fig. 3[1].

"Dark cinereo-fuscous, from blackish markings on a testaceous ground. Head reddish testaceous, almost wholly overlaid with black longitudinal markings, on the summit broken into points, except for a rather broad median stripe; frontal costa as narrow above as the basal joint of the uniformly luteous antennæ, feebly sulcate below. Pronotum testaceous above, reddish testaceous on lateral lobes, heavily sprinkled with black puncta above, wanting on a narrow stripe bordering the lateral carinæ, heavily striped or clouded with blackish on the lateral lobes, especially above, and also punctate, the lateral carinæ faintly divergent in front, the front margin faintly, the hind margin slightly, convex. Tegmina flecked with fuscous, pretty uniformly and rather sparsely and slightly infuscated on basal fourth, the anal area subcinereous, flecked with fuscous; wings pellucid, growing gradually infuscated in distal half, the base faintly tinged with greenish. Hind femora dull testaceous, more or less infuscated, especially above, with three broad clouds, the outer two separated by a pregenicular, broad, dull, luteous annulus; hind tibiæ with a similar but narrower and clearer postgenicular annulus breaking the black proximal half, the distal half orange-red, the spines black, except basally."

Length of body 33, of antennæ 12·5, of tegmina 25, of hind femora 19, of hind tibiæ 17·5 millim.

Hab. North America, La Cueva, Organ Mts. (*Townsend* [1]).

Two females.

Table for separating the Species of Mermiria.

A[1]. Head shorter than pronotum, or, if (rarely) as long, then the greatest width of the fastigium is greater than its length beyond the narrowest part of the vertex; last ventral segment of male bluntly acuminate.	
b[1]. Fastigium less prominent and blunter, its greatest breadth being considerably greater than its length beyond the narrowest part of the vertex, especially in the female.	
c[1]. Stouter, the hind femora shorter, not reaching the tips of the tegmina in the female; disc of pronotum, in female, hardly or not more than twice as long as the greatest breadth; head with a broad occipital fuscous band	1. *texana*, Bruner.
c[2]. More slender, the hind femora longer, reaching the tips of the tegmina in the female; disc of pronotum distinctly, generally much, more than twice as long as the greatest breadth.	
d[1]. Tegmina distinctly maculate in both sexes; hind femora, both externally and internally, with indications of dusky bands; occiput provided with a narrow fuscous band . .	[2. *maculipennis*, Bruner.]
d[2]. Tegmina immaculate; hind femora without dusky bands; occiput lacking the fuscous band	[3. *bivittata*, Serv.]
b[2]. Fastigium of the vertex more prominent and angulate, its greatest breadth being scarcely greater, even in the female, than its length beyond the narrowest part of the vertex; disc of pronotum considerably more than twice as long as the greatest breadth	4. *intertexta*, Scudd.
A[2]. Head as long as pronotum; fastigium at least as long beyond the narrowest part of the vertex as its extreme breadth, semi-elliptical, the sides converging with a well-rounded curve, the tip broadly rounded; last ventral segment of male more produced and somewhat acutely acuminate	5. *neo-mexicana*, Thom.

1. **Mermiria texana**, Bruner. (Tab. I. figg. 19, 19 *a*, ♀.)

Mermiria texana, Bruner, Proc. U.S. Nat. Mus. xii. pp. 53, 54, t. 1. fig. 11 (1890)[1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 206 (1897)[2]; Scudder, Proc. Amer. Acad. Arts & Sciences, xxxv. p. 42 (1899)[3].

Hab. North America, Colorado, New Mexico, Fort Grant in Arizona[2], and El Paso in Texas[1].—Mexico, Montelovez in Coahuila (*coll. Scudder*), Villa Lerdo in Durango[1] (*coll. Bruner*).

Not represented in the 'Biologia' Collection.

[2. **Mermiria maculipennis,** Bruner. (Tab. I. fig. 9, ♂.)

Mermiria maculipennis, Bruner, Proc. U.S. Nat. Mus. xii. pp. 54, 55 (1890) [1].

Mermiria bivittata, Scudd. Proc. Amer. Acad. Arts & Sciences, xxxv. p. 42 (1899) [2]; Proc. Dav. Acad. Nat. Sci. viii. p. 19 (1890) [3].

Hab. North America, Carrizo Springs, Dimmit County, and San Antonio, both in Texas [1–3] (*colls. L. Bruner and of U.S. National Museum*).]

[3. **Mermiria bivittata,** Serv.

Opsomala bivittata, Serv. Hist. Nat. Ins. Orthopt. p. 589 (1839) [1]; Walk. Cat. Dermapt. Salt. Brit. Mus. iii. p. 507 (1870) [2].

Acridium bivittatum, de Haan, Bijdr. Kenntn. Orthopt. p. 143 (1842) [3].

Opomala bivittata, Thomas, Trans. Illinois State Agric. Soc. v. p. 447 (1865) [4]; Syn. Acrid. N. Amer. p. 65, fig. 16 (1873) [5]; Scudd. Final Rept. U.S. Geol. Surv. Nebr. p. 250 (1872) [6].

Mermiria bivittata, Scudd. Proc. Bost. Soc. Nat. Hist. xix. pp. 30, 31 (1877) [7]; Proc. Amer. Acad. Arts & Sciences, xxxv. p. 42 (1899) [8].

Hab. North America [1–6], Las Cruces (*Townsend*), Mesilla (*Morse*), Arizona and New Mexico (*Scudder* [7 8]), Texas (*Scudder* [7 8], *Bruner*).

These records, together with the wide known range of the species, are sufficient evidence to indicate that it is present in portions of Northern Mexico.]

4. **Mermiria intertexta,** Scudd.

Mermiria intertexta, Scudd. Proc. Amer. Acad. Arts & Sciences, xxxv. pp. 42, 43 (1899) [1].

Hab. North America, Eagle Pass, Texas, on the border of Mexico [1].

5. **Mermiria neo-mexicana,** Thomas.

Opomala neomexicana, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, pp. 77, 78 (1870) [1]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 16. fig. 10 (1874) [2].

Mermiria neomexicana, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 262 (1876) [3]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 206, 207 (1897) [4].

Mermiria belfragei, Stål, Recens. Orthopt. i. p. 102 (1873) [5]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. pp. 866, 900 (1875) [6]; Scudd. Proc. Amer. Acad. Arts & Sciences, xxxv. p. 43 (1899) [7].

Hab. North America, New Mexico and Texas [1–7].—Mexico, Villa Lerdo in Durango (*Bruner*).

A specimen taken by the present writer at Villa Lerdo, during the autumn of 1887, but not now in his possession, was determined as this species.

PAROPOMALA, Scudder.

Paropomala, Scudder, Psyche, viii. p. 437 (1899).

General form cylindrical. Head moderately long, the face receding; vertex between the eyes nearly as broad as their shortest diameter; plane of lateral foveolæ depressed but vertical; eyes regularly elliptical,

almost or quite as rounded above as below, broadest at middle; pronotum well rounded above, without lateral carinæ, or, at most, present only in the males of some species as feeble angles on the hind lobes. Tegmina narrow, straight, with few veins and cross-veins, the apex broadly rounded, somewhat abbreviated in some species and longer than the abdomen in others. Front and middle legs short and slender; hind femora varying from slender to moderately heavy, usually shorter than the abdomen in both sexes; hind tibiæ armed with from 12 to 15 spines in the outer row.

The species which belong to the region under consideration can be separated as follows:—

Table for separating the Species of Paropomala.

A¹. Tegmina not reaching the tip of the abdomen or even the tip of the hind femora; subgenital plate of male elongate, half as long again as the last ventral segment. Colour green or pallid . . . . . [1. *calamus*, Scudd.]

A². Tegmina surpassing the hind femora, generally reaching the tip of the abdomen, and in some cases surpassing it. Subgenital plate of male (at least in the species where known) not very long, no longer than the ventral segment. Colour variable.

*b*¹. General form robust. Posterior lateral edges of pronotum decidedly roundly produced below. Occiput without a median carina. Prevailing colour greenish . . . . . [2. *pallida*, sp. n.]

*b*². General form more slender. Occiput provided with a median carina. Lower lateral edges of pronotum straight or nearly so. Prevailing colour testaceous, but varied with brown and white.

*c*¹. Head rather large, its length about equalling that of the pronotum. Lateral dark and light bands of equal length . . . . . 3. *dissimilis*, sp. n.

*c*². Head of moderate size, its length considerably less than that of the pronotum. Lateral bands of unequal width, the darker one being the narrower . . . . . [4. *virgata*, Scudd.]

[1. **Paropomala calamus**, Scudd.

Paropomala calamus, Scudd. Psyche, viii. p. 437 (1899) [1].

Hab. North America, Lancaster, California (*Morse* [1]).

Included here on account of the similarity of the faunas of Northern Mexico and Southern California.]

[2. **Paropomala pallida**, sp. n.

A rather robust form, when compared with the other species of the genus. Of a pale green colour throughout, except along the lower half of the sides of the pronotum and pleura of meso- and metathorax, where there is an indication of the usual paler streak.

Head as broad as the front edge of the pronotum, slightly ascending; the fastigium above deeply sulcate at the sides and in front, at which latter point there is an indication of a short median carina; lateral foveolæ arcuate, linear, profound; frontal costa deeply and broadly sulcate, its sides parallel to the ocellus, gently expanding below; antennæ ensiform, rather deeply depressed above and equally strongly carinate below. Pronotum of equal width in front and behind, gently contracted in the middle, the hind lobe of the dorsum slightly elevated, and finely granulate, broadly rounded on the posterior margin; sides nearly perpendicular, the lower posterior portion with a short, broad, downward projecting lobe;

two nearly equal transverse sulci crossing the dorsal surface, the posterior one situated a little behind the middle; median carina slight, but visible throughout. Prosternum with scarcely any indication of protuberance or spine. Tegmina of moderate width, extending a little beyond the apex of the abdomen. Front and middle legs short and slender, the hind femora moderately stout, about four-fifths the length of the abdomen; hind tibiæ provided with 12 spines in the outer row.

Length of body, ♀, 35, of antennæ 11, of pronotum 6, of tegmina 25·5, of hind femora 16 millim.

Hab. NORTH AMERICA, Indio, California (*Wickham*).

Three females. This appears to be the largest and most robust species of the genus thus far discovered, and, judging from its greenish colour, probably frequents lower ground than do its allies that live in places where the vegetation is normally somewhat short and dry.]

3. **Paropomala dissimilis,** sp. n.

Very like *P. virgata*, Scudd., but larger and with the colours more decided. Head slightly wider than the front edge of the pronotum, about as long as the prothorax, and provided with a well-defined carina that begins at the front edge of the vertex and extends backwards over the middle of the occiput to the front edge of the pronotum; pronotum gently constricted in the middle, the median carina linear but distinct, severed by two transverse sulci, the lower lateral edges feebly produced, much less so than in *P. pallida*. Tegmina reaching the tip of the abdomen.

General colour pale testaceous above, lighter below, with a dark brown longitudinal stripe reaching from the middle of the back edges of the eyes to a point just above the insertion of the hind femora; below this dark band there is one of equal width and length, which is white. Tegmina with the median vein dusky, the costal margin whitish, the median and dorsal areas dull testaceous.

Length of body, ♀, 32·5, of pronotum 5·25, of tegmina 21·5 millim.

Hab. ARIZONA, SOUTH CALIFORNIA, or NORTHERN MEXICO (*coll. Calif. Acad. Sciences*).

The only specimen of this species which has been examined is the one contained in the collection of the California Academy of Sciences. It was among material collected by Gustav Eisen in Southern Arizona, California, and Northern Mexico, and submitted to the writer for determination. The specimen, a female, lacks both antennæ and hind femora, but differs so markedly in shape and in the comparative size of its head that it is described without hesitation as distinct.

[4. **Paropomala virgata,** Scudd.

Paropomala virgata, Scudd. Pysche, viii. p. 437 (1899) [1].

Hab. NORTH AMERICA, Colorado, Nebraska, California, New Mexico, Arizona, &c.[1]

This is by far the most abundant and, at the same time, the most widely distributed species of the genus. Specimens have been collected by A. P. Morse at Mesilla, New Mexico (June 29th); between Gila Bend and Yuma, Arizona (July 4th); and in California, at Palm Springs (July 12th), Cahon Pass (July 10th), Lancaster (Aug. 1st), and Kern City (Aug. 4th). It has also been found as far north as Eastern Colorado and South-west Nebraska.]

PAPAGOA *, gen. nov.

Related to *Syrbula*, but differing from that genus in having a narrower vertex, which is without a longitudinal carina; and in the longer tegmina and wings, the former without regular veins in the discal field or on the costal margin. Hind femora slender, the tibiæ provided with 16 spines in the outer row. The other characters are indicated in the Table for separating the genera of the Tryxalinæ (*anteà*, p. 27).

1. **Papagoa arizonensis,** sp. n.

The single male specimen at hand has been dried after long immersion in spirits, besides being otherwise injured, hence an approximate description only can be attempted. The general appearance would suggest that the insect was in life testaceous, varied with brown, and possibly had the dorsal angles and costal margins of the tegmina streaked with green or pale yellow. The pronotum with the upper half of the lateral field provided with a dusky band that is continued on the disc of the tegmina and the sides of the head; the hind femora greenish, with some dusky marks along the upper edge of the outer face; the lower portions of the body dirty-white or yellowish.

Length of body, ♂, 23, of pronotum 4·30, of tegmina 22·5, of hind femora 14 millim.

Hab. ARIZONA or NORTHERN MEXICO (*coll. Bruner*).

A single male found among some Orthoptera collected by Mr. G. W. Dunn in Southern Arizona or Northern Mexico.

SYRBULA, Stål.

Oxycoryphus, Saussure, Rev. et Mag. Zool. 1861, p. 316; Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 786 (1870).

Stenobothrus, Uhler, Proc. Ent. Soc. Phil. ii. pp. 553–555 (1864); Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 753; Thomas, Syn. Acrid. N. Amer. p. 84 (1873); Glover, Illustr. N. Amer. Ent., Orthopt. t. 4. fig. 13 (1872) (nec Fischer).

Syrbula, Stål, Recens. Orthopt. i. p. 90 (1873); Brunner, Rev. Syst. Orthopt. p. 119 (1893).

This genus is typically one belonging to the arid regions of the plateaux of Central Mexico and the South-western United States, where a rather large number of species occur. It is also to be met with along the Gulf Coast in the more humid portion of Mexico. The different forms vary greatly, but they may be recognized fairly well by referring to the accompanying Table.

The males of the various species of the genus seem to be very closely related, and in some instances are rather difficult to separate. If we take the pains, however, to compare them closely with the females, and at the same time note the localities where taken, there need be but little trouble in this respect.

Table for separating the Species of Syrbula.

FEMALES.

A¹. Pronotum with the lateral carinæ nearly straight, only gently bowed inward, the dorsal field provided laterally with two con-

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* A geographical name.

tinuous, rather broad, dusky bands; antennæ filiform; hind tibiæ furnished with about 20–23 spines in the outer row.

*b*¹. Larger; the mottling in the disc of the tegmina usually running together; antennæ slender throughout, rather long; hind tibiæ infuscated apically . . . . . 1. *admirabilis,* Uhl.; *leucocera,* Stål.

*b*². Smaller; the mottlings in the disc of the tegmina appearing as distinct blotches; antennæ quite short, semiclavate; hind tibiæ unicolorous, pale . . . . . 2. *pacifica,* sp. n.

A². Pronotum with the lateral carinæ strongly bowed inward, the dorsal field above without continuous dusky bands; antennæ with the basal joints more or less strongly flattened; hind tibiæ furnished with from 16–18 spines in the outer row.

*b*¹. Tegmina nearly or quite without mottling in the discal field.

*c*¹. Larger species. Disc of pronotum widest behind, and with lateral dusky bands showing only on the posterior lobe. Tegmina with the costal edge membranous . . . . . 3. *montezuma,* Sauss.

*c*². Smaller species. Disc of pronotum as wide in front as behind, the lateral dusky bands showing on the front edge of the anterior lobe as well as on the posterior one. Tegmina with the costal edge coriaceous . . . . . 4. *valida,* Rehn.

*b*². Tegmina provided with well-defined mottling in the discal field.

*c*¹. Antennæ with the basal joints only slightly depressed or flattened. Tegmina semimembranous throughout . . . . [6. *fuscovittata,* Thom.]

*c*². Antennæ with the basal joints considerably depressed or flattened, thus giving these segments a dagger-like form.

*d*¹. Large and robust; the head large and wide; pronotum with faint indications of the lateral dusky discal stripe on the sides of the extreme front edge. Wings markedly tessellate with hyaline . . . . . 7. *robusta,* sp. n.

*d*². Form more slender; the head not unusually large or broad; pronotum in front without traces of lateral discal stripe.

*e*¹. Larger. The tegmina deep grass-green, rather heavily mottled with dark brown; the tibiæ and tarsi of all the legs infuscated or purplish . . . . . [8. *acuticornis,* Bruner.]

*e*². Smaller. The tegmina light green, rather obscurely mottled with smoky brown; the tibiæ but little infuscated . . . . . [9. *modesta,* sp. n.]

MALES.

A¹. Lateral carinæ of pronotum only gently bowed. Tegmina always plainly and decidedly mottled in the discal area. Wings pale fuliginous. Sides of face and thorax varied with streaks of light testaceous or dirty white.

*b*¹. Hind femora with the outer face of basal half crossed by well-

defined, dusky, oblique bands, the tibiæ also decidedly infuscated near the middle and at the apex . . . . . 1. *admirabilis*, Uhl.

b^2. Hind femora with the outer face of the basal half uniformly dusky, the tibiæ less decidedly infuscated . . . . . *leucocera*, Stål (?).

A^2. Lateral carinæ of pronotum more decidedly bowed. Tegmina showing no decided mottling in the discal area. Wings dark fuliginous, in most cases nearly black. Sides of face and thorax not greatly varied with dirty white or testaceous.

b^1. Larger. Legs more or less green.

c^1. Hind femora on the outer face not dusky; disc in outer half of tegmina occasionally occupied by faint dusky maculations. [8. *acuticornis*, Bruner.]

c^2. Hind femora with the outer face on basal half occupied by dusky.

d^1. Apical third of hind femora deep transparent green, the knees not much infuscated . . . . . [6. *fuscovittata*, Thom.]

d^2. Apical third of hind femora dull dirty green . . . . . 3. *montezuma*, Sauss.

b^2. Smaller. Legs either infuscated or uniformly light-coloured.

c^1. Form robust: general colour black, varied with green on head and thorax . . . . . 5. *eslavæ*, Rhen.

c^2. Form slender: general colour greenish, varied with testaceous and ferruginous . . . . . [9. *modesta*, sp. n.]

1. **Syrbula admirabilis**, Uhler.

Stenobothrus admirabilis, Uhler, Proc. Ent. Soc. Phil. ii. p. 553 (1864) [1]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 753 (1870) [2]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 4. fig. 13 (1872) [3].

Syrbula admirabilis, Thomas, Rep. Ent. Illinois, ix. pp. 88, 93, 100–102 (1880) [4]; Bruner, Bull. Washb. Lab. Nat. Hist. i. p. 131 (1885) [5]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 222 (1879) [6].

? *Syrbula leucocera*, Stål, Recens. Orthopt. i. pp. 102, 103 (1873) [7]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. p. 869 (1875) [8].

Hab. North America [1–6], United States, chiefly southward.—Mexico, San Rafael in Vera Cruz (*coll. Bruner*).

In the collection of the writer there are several males from San Rafael, Vera Cruz, which differ but little from others taken in Florida. Perhaps the *S. leucocera* of Stål may be identical with these Mexican specimens. No females have been examined from Mexico.

2. **Syrbula pacifica**, sp. n.

General colour grass-green; the pronotum with the lateral carinæ nearly straight, its disc laterally marked with longitudinal dark bands. Tegmina provided with a row of large circular dusky spots along the discal field, occasionally running together as in *S. admirabilis* and several of the other species. Wings only faintly clouded or fuscous. Head of moderate size; the occiput short, about two-thirds as long as

the pronotum, provided with a well-defined median carina, paralleled by two others, one on either side. These lateral carinæ of the occiput followed by narrow dark lines, which enclose a longitudinal field, either lighter or darker in colour than the region outside, and which, in the specimens before me, seems to be regularly divided by transverse depressions or ridges, giving to it a scalariform appearance. Face not greatly oblique; frontal costa about half as wide as the vertex, expanding a trifle below, gently sulcate at the ocellus. Antennæ short, reaching about the middle of the pronotum, slender at the base, the joints on the apical third depressed and somewhat clavate in appearance. Pronotum short, the last transverse sulcus situated about the middle; front and hind margins above nearly straight; the hind lobe finely roughened. The ordinary narrow white line back of the eyes and on the sides of the pronotum, the latter in a dusky patch. Hind femora with a dusky streak along the upper edge of the basal half of the outer face; anterior and middle legs purplish.

Length of body, ♀, 32, of antennæ 7, of pronotum 5, of tegmina 23, of hind femora 21 millim.

Hab. Mexico, Tepic (*Gustav Eisen, in coll. Calif. Acad. Sciences*).

Two females.

3. **Syrbula montezuma,** Sauss.

Oxycoryphus montezuma, Sauss. Rev. et Mag. Zool. 1861, p. 316 [1]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 786 (1870) [2]; Thomas, Syn. Acrid. N. Amer. p. 202 (1873) [3].

Syrbula montezuma, Stål, Recens. Orthopt. i. p. 102 (1873) [4]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. p. 869 (1875) [5]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 221, 222 (1897) [6].

Hab. Mexico [1], Guerrero, Eslava in the Distrito Federal (*Barrett, in coll. Bruner*).

Although there are no examples of this locust in the 'Biologia' collection, Mr. O. W. Barrett has sent me several specimens of both sexes.

4. **Syrbula valida,** Rehn.

Syrbula (*Herus*) *valida,* Rehn, Trans. Amer. Ent. Soc. xxvii. p. 91 (1900) [1].

Hab. Mexico, Eslava (*Barrett, in coll. Rehn* [1]).

The types have been examined by me.

5. **Syrbula eslavæ,** Rehn.

Syrbula eslavæ, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 90 (1900) [1].

Hab. Mexico, Eslava (*Barrett, in coll. Rehn* [1] *and coll. Bruner*: ♂.)

This is very likely the male of *S. valida.*

[6. **Syrbula fuscovittata,** Thomas. (Tab. I. figg. 25, 25 *a*, ♂.)

Syrbula fuscovittata, Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. Zool. pp. 870, 871, t. 45. fig. 7 (1875) [1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 222, 223 (1897) [2].

Hab. North America, Southern Arizona (*Henshaw* [1]), Tucson (*Kunze*), Arizona (*Dunn, in coll. Bruner*); also reported from Filmore Cañon, Organ Mountains, New Mexico, at an altitude of 5700 feet above sea-level (*Scudder & Cockerell*).]

7. **Syrbula robusta,** sp. n.

Large and robust, with acuminate antennæ and a larger head than usual. General colour green; discal area of wings with the customary row of dusky blotches. Pronotum with strongly bowed lateral carinæ, edged on the outer side of the anterior lobes and on the inner side of the posterior lobe with deep black, also with indications of the discal lateral dusky bands, both on the hinder and the extreme front edge of the anterior lobes; the sides with faint indications of the middle dusky patch and the white streak which are characteristic of the genus. Wings fuliginous and quite markedly tessellate with hyaline, especially on the anterior half. Tibiæ and tarsi of anterior and middle legs infuscated or dark purplish. [Hind legs missing.]

Length of body, ♀, 38, of antennæ 10·5, of pronotum 6·15, of tegmina 28 millim.

Hab. MEXICO, Ventanas in Durango 2000 feet (*Forrer*).

A single imperfect specimen.

[8. **Syrbula acuticornis,** Bruner.

Syrbula acuticornis, Bruner, Proc. U.S. Nat. Mus. xii. p. 55 (1890) [1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 221, 223, t. 2. figg. 10, 10 *b* (1897) [2].

Hab. NORTH AMERICA, extreme South-western Texas [1] (*A. Wadgymar, in coll. Bruner*), New Mexico, east of Mesilla Park (*Morse*), La Trementina, New Mexico (*Alice Blake*).]

[9. **Syrbula modesta,** sp. n.

A rather small, moderately robust species, with the antennæ subensiform in the female, and having the joints somewhat depressed near the base and towards the apex in the male. Head large, nearly or quite as long above as the pronotum, a little broader than the front edge of the latter. Pronotum with the lateral carinæ strongly but roundly converging, approaching closest a little in advance of the middle; anterior lobes quite smooth, the hind one rather strongly granulate or roughened, the punctures and ridges tending to assume alternate longitudinal rows. Tegmina narrow, tapering; in the female about reaching the tip of the abdomen, in the male broadest about the middle and a little longer. Hind femora slender, somewhat surpassing the tegmina in both sexes.

General colour of the female greenish, varied with dirty white, testaceous, ferruginous, brown, and black; of the male testaceous, varied with white, green, brown, and black. Female with the head, sides of pronotum, pleura, and hind femora green; tegmina also green, but with the discal field occupied by large dark brown or fuliginous spots, which often run together, thereby occupying the greater portion of the field. Dorsal surface of pronotum ferruginous, with a wedge-shaped black mark along the inner edge of the lateral carina on each side of the hind lobe; upper edges of lateral lobes with a narrow streak of black. There are also faint indications of the usual dark streaks along the sides of the head and pronotum. In the male the face and sides of the pronotum are green; the cheeks, occiput, and disc of the pronotum ferruginous, the former with streaks of white. Tegmina with the costal margin black, followed by a narrow streak of greenish-white at the base, transparent beyond, then the disc is dusky on account of the fuliginous wings showing through, and the dorsal portion testaceous or cinereous. The hind wings somewhat dusky towards the base.

Length of body, ♂ 19, ♀ 29; of antennæ, ♂ 8, ♀ 7; of pronotum, ♂ 3·25, ♀ 5; of tegmina, ♂ 14–15, ♀ 20; of hind femora, ♂ 13, ♀ 17·5 millim.

Hab. NORTH AMERICA, Grand Cañon of the Colorado River, Arizona (*C. H. T. Townsend & A. B. Cordley*).

Two males and two females.]

[ACROLOPHITUS, Thomas.

Acrolophitus, Thomas, Ann. Rep. U.S. Geol. Surv. Terr. ii. p. 278 (1871).

The genus *Acrolophitus* is the type of a small group, the members of which are mostly distributed over the plateau region north of Mexico and the western portions of the United States. Until now a single species only has been recorded. In looking over a number of specimens in the material before me, coming from various localities between the Mexican boundary in the south and the Saskatchewan River in the north, a great deal of variation in structure as well as colour is apparent. This being true, it is evident that at least two, and possibly three, distinct species should be recognized. For the present, however, but two such forms will be named, viz., the typical *A. hirtipes* of Say, coming from the eastern foot-hills of the Rocky Mountains from Southern Wyoming to Northern New Mexico; the second, so far as known to the writer, restricted to the prairie-region of South-western Texas near the Rio Grande, and undoubtedly also extending across the border into Mexico. What might well be termed a third form, if not a distinct species, is to be met with in the sand-hills of Nebraska, in the Dakotas, Montana, and on the plains of the Saskatchewan west of Manitoba. The habits of *A. hirtipes* and the more northern form are similar, both being found on rolling ground where vegetation is rather scant. The third, which we will provisionally call *A. uniformis*, seems to prefer various species of *Artemisia* and allied genera of plants as food. In flight these insects are rather slow, but their green colour, combined with the dusky banded hind wings, renders them quite conspicuous creatures when on the wing.

These forms may be readily distinguished by the following subjoined brief synoptical table:—

Table for separating the Species of Acrolophitus.

A¹. Insect decidedly variegated with light and dark streaks and blotches. The pronotum acute-angled behind in both sexes. The legs not profusely hirsute	2. *variegatus*, sp. n.
A². Insect only slightly or not at all variegated with light and dark streaks. The pronotum in female right-angled behind, that of the male somewhat acute. Legs profusely hirsute.	
*b*¹. Tegmina showing traces of darker blotches, frequently quite decided. The hind femora faintly banded with narrow, oblique, yellow streaks.	1. *hirtipes*, Say.
*b*². Tegmina unicolorous, or if showing traces of light blotches, this is due to the lighter colour of the veinlets. Hind femora unicolorous.	3. *uniformis*, sp. n.?

1. **Acrolophitus hirtipes**, Say.

Gryllus hirtipes, Say, Amer. Ent. iii. t. 34 (1828) [1]; Ent. N. Amer. ed. Lec. i. p. 78, t. 34 (1859) [2].
Acrolophitus hirtipes, Thomas, Ann. Rep. U.S. Geol. Surv. Terr. ii. pp. 266, 278 (1871) [3]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 9. fig. 7 (1872) [4]; Scudd. Psyche, v. pp. 435, 436 (1890) [5].
Acrolophita hirtipes, Uhler, Bull. U.S. Geol. Surv. Terr. iii. p. 794 (1877) [6].

Hab. North America [1–6], eastern slopes of the Rocky Mountains from Northern Texas to Southern Wyoming.

Found in all the American collections, but not in the 'Biologia' material, which would indicate that the species does not extend far into Mexico. All the records of specimens taken beyond these limits refer without doubt to either *A. variegatus* or *A. uniformis*.

2. **Acrolophitus variegatus**, sp. n. (Tab. I. fig. 3, ♂.)

General colour dark apple-green, greatly streaked and mottled with pinkish-testaceous or dull salmon-colour. The crest on the hind lobe of the pronotum very high and evenly rounded, forming almost one-half of a circle. Head pyramidal, the vertex greatly ascending, acuminate; occiput short, narrow; frontal costa prominent, its sides nearly parallel below the antennæ, rather deeply sulcate throughout. Antennæ long and slender, the joints scarcely depressed. Pronotum strongly contracted in front and widened behind, the posterior margin of the disc acute-angled in both sexes; the median carina wanting on the anterior lobe, but present and modified into an exceedingly high and evenly rounded crest on the posterior lobe, occupying about four-fifths of the length of the pronotum. Tegmina and wings ample, extending considerably beyond the tip of the abdomen in both sexes. Hind femora also long and slender, nearly attaining the apex of the closed wings.

General colour above of various shades of apple-green, below testaceous and dirty white with a faint tinge of green. Face dirty greenish-yellow; cheeks and occiput dark green, with two oblique dull salmon-coloured streaks on each side, which are continued on to the sides of the pronotum; the latter with a similarly-coloured band on each side of the disc above running from near the front edge of the crest to the hind edge just below the shoulders. Anterior and middle legs testaceous, with obscure bands of brown and dirty green; hind femora green, with their lower edge and the base, also two oblique bands and one preapical band, of a pale salmon-colour. Tegmina dark green, varied with irregular light-coloured maculations in the discal field; on the basal half the light and dark spots are much smaller and occupy about an equal amount of space, beyond this the dark colour predominates and occupies nearly the entire width of the wing as unequal transverse blotches. Antennæ dark ferruginous or reddish-brown.

Length of body, ♂ 34, ♀ 44; of pronotum, ♂ 8, ♀ 10; of tegmina, ♂ 31·5, ♀ 36; of hind femora, ♂ 23, ♀ 26; of antennæ, ♂ 19, ♀ 20 millim.

Hab. North America, Carrizo Springs, Dimmit County, Texas, and about 20 miles from the Mexican border (*A. Wadgymar, in coll. Bruner*).

Specimens of both sexes were collected in the month of June.]

ACROCARA, Scudder.

Acrocara, Scudder, Psyche, v. pp. 436, 437 (1890).

The representatives of this genus are widely distributed over the arid regions of the Rocky Mountains. Two species are now known; and in both cases but few individuals have thus far been reported. One of these, *A. maculipennis*, Scudd., is confined to Mexico; the other, *A. pulchella*, Bruner, comes from Idaho among the lava-beds.

1. **Acrocara maculipennis,** Scudder. (Tab. I. figg. 1, 1 *a*, ♀.)

Acrocara maculipenne, Scudd. Psyche, v. pp. 437, 438 (1890)[1].

Hab. Mexico, Montelovez in Coahuila (*coll. Scudder*[1]), Villa Lerdo in Durango (*coll. Bruner*[1]).

The only specimens of this locust before me are two males from Montelovez, found on September 20th, and a single female from Villa Lerdo, found in November; it is natural to surmise, therefore, that it is either quite rare or else restricted in its distribution to peculiar localities or certain food-plants. The female referred to above was captured by the present writer; so far as my memory serves me, it was found upon a low thorny herb with greyish leaves growing in alkali soil at the foot of a steep rocky slope. Although a careful search was made at the time, no additional specimens could be found.

MACHÆROCERA, Saussure.

Machærocera, Saussure, Rev. et Mag. Zool. xi. p. 391 (1859).

The insects comprising this genus are confined to Mexico and the northern portions of Central America, where they seem to be generally distributed in the more humid districts. Their general colour is dusky, of some shade of brown, and, in certain forms, occasionally marked with lighter tints along the dorsum and on the hind femora. The wings are blue, becoming more or less heavily infuscated on the apical half or two-thirds. The various species differ one from the other chiefly in size and form, and, as a rule, occupy different sections of the country. The annexed table will aid in distinguishing them.

Table for separating the Species of Machærocera.

A[1]. Hind wings with the dusky portion dense and quite uniform, occupying the greater part of the apical two-thirds, and in some instances, perhaps, quite three-fourths.

b[1]. Hind tibiæ decidedly blue or bluish; the hind femora marked with three yellow bands. Dorsum usually provided with a longitudinal pale stripe. [Occurs near the Gulf Coast from Tampico to Yucatan —a slender, rather long-winged insect.] . . . . . 1. *mexicana,* Sauss.

b[2]. Hind tibiæ more or less rufous, or fuscous, but sometimes with a bluish tinge; the hind femora less prominently banded. Dorsum generally without the pale longitudinal stripe.

c[1]. Rather slender. General colour very dark brown, the tegmina usually not conspicuously light-coloured on the dorsal field. [Mexico, Guatemala, and Honduras.] . . . . . 2. *obscura,* sp. n.

c[2]. More robust. General colour ferruginous-brown, the dorsal field of the tegmina usually conspicuously lighter-coloured. [West coast of Central Mexico.] . . . . . 4. *pacifica,* sp. n.

A². Hind wings with the dusky portion light, irregular, occupying less than two-thirds of the apical portion, often in great part composed of the infuscation of the veins.

*b*¹. Larger. Tegmina almost without mottling; the infuscation of the wings little more than the darkening of the veins. [Pacific slope of Mexico northward.] . . . . . 3. *magna*, sp. n.

*b*². Smaller. Usually with conspicuously mottled tegmina; the infuscation more decided, but tessellated with hyaline in the female. [Mountain regions of eastern slope of Mexico between 1000 and 6000 feet altitude.] . . . . . 5. *sumichrasti*, Thom.

1. **Machærocera mexicana**, Sauss.

Machærocera mexicana, Sauss. Rev. et Mag. Zool. xi. p. 391 (1859) [1].

"Fuscous, with a pale longitudinal stripe. Pronotum granulose, rugulose, and carinated, the carinæ interrupted in the middle; posterior margin angulate; apex subemarginate; the posterior area flat above, each side carinated. The posterior femora marked with three yellow bands; posterior tibiæ blue, with a testaceous ring at the base. Wings fuscous; the base and posterior portion bluish. The subanal plate of the male tricuspidate.

"♂. Length 1·2 in. ♀. Length 1·8 in."

Hab. MEXICO [1], Tampico (*Mus. Geneva*), Temax in N. Yucatan (*Gaumer*).

A specimen borrowed from the Museum in Geneva, Switzerland, is now before me; it is a male, labelled in Saussure's handwriting and undoubtedly typical. This insect, which is from Tampico, measures just a trifle less than 30 millim. from the anterior point of the vertex to the tip of the closed tegmina, and agrees in every particular with the above brief description. In the 'Biologia' collection there are two others, ♂ and ♀, from Yucatan.

2. **Machærocera obscura**, sp. n.

General colour very dark brown, the wings narrow, largely and heavily infuscated. The insect with a more slender body and longer antennæ than usual, and with a very prominent pale annulation near the base of the hind tibiæ, which are very dark but with a bluish tinge. Structure of vertex, face, and pronotum much as in *M. mexicana* and *M. sumichrasti*. Although the general colour is very dark, there are indications of the usual fine mottling on the tegmina and of lighter bands on the hind femora, the inner face of the latter especially showing the bands conspicuously.

Length of body, ♂ 19–20, ♀ 33; of antennæ, ♂ 13, ♀ 13·5; of pronotum, ♂ 4, ♀ 7; of tegmina, ♂ 21–22, ♀ 31–32; of hind femora, ♂ 12, ♀ 18 millim.

Hab. MEXICO, Rio Papagaio [1 ♂, 2 ♀], Tierra Colorada [1 ♂], and Rincon, all in Guerrero (*H. H. Smith*); BRITISH HONDURAS, Rio Sarstoon (*Blancaneaux*: ♀); GUATEMALA, San Gerónimo (*Champion*: ♂ ♀).

Whether the three forms referred to above are geographical races of a single species, or distinct, matters but little. The only way to decide this would be to study their habits in the field.

3. **Machærocera magna,** sp. n.

Much larger and more robust than *M. mexicana*, with the dusky portion of the hind wings occupying little more than the apical half, and, for the most part, due to the infuscation of the veins and cross-veins.

Head rather broad, the occiput somewhat tumid, and, together with the vertex, rising slightly above the upper edges of the eyes; vertex broad, flat, the sides straight and meeting in front almost in a point, the side-areas flat, sloping so that they can readily be seen from above; frontal costa prominent between the insertion of the antennæ, the sides parallel and when viewed in profile evenly rounded, below the ocellus gradually widening to the clypeus, sulcate throughout. Pronotum broad, coarsely granulate, the median carina heavy, of equal prominence throughout, cut by the anterior and posterior transverse sulci, the latter placed about the middle. Tegmina broad, with scarcely any indication of maculation. Posterior femora with the outer disc uniformly pale, without transverse bands, save a single median light one interiorly, but with several dark brown dots along the carina which borders this field below. Tibiæ infuscated, with a slightly paler basal annulus.

General colour of the body, legs, and tegmina dull reddish-brown, the latter a trifle paler dorsally. Wings deep transparent blue on the basal half and along the anal edge for some distance towards the apex. In the dusky portion this colouring is due chiefly to the infuscation of the veins and veinlets, although there are also indications of the clouding of the membrane as well, especially interiorly and towards the apex.

Length of body, ♀, 43; of pronotum 10, of tegmina 39, width of same 7·15; length of hind femora 24 millim.

Hab. MEXICO, "Durango or Sinaloa" (*Forrer*).

One female.

4. **Machærocera pacifica,** sp. n.

Stouter and somewhat larger than any of the east coast forms, but with the hind wings largely fuliginous. Structure of the head and pronotum similar to that of *M. magna*, only a trifle more robust in proportion to the size of the insect. Tegmina moderately broad, with the dorsal field lighter coloured, the disc obscurely mottled. Hind femora with obscure indications of light and dark bands externally and the same quite pronounced internally.

Length of body, ♂ 22, ♀ 39; of antennæ, ♂ 13, ♀ 16; of pronotum, ♂ 5·5, ♀ 7–8; of tegmina, ♂ 23, ♀ 32–34; of hind femora, ♂ 15, ♀ 21 millim.

Hab. MEXICO, Tepic, on the Pacific slope, not far from San Blas (*Gustav Eisen, in coll. Calif. Acad. Sciences*).

Numerous specimens of both sexes.

5. **Machærocera sumichrasti,** Thomas. (Tab. I. figg. 7, 7 *a*, ♀.)

Machærocera sumichrasti, Thomas, Bull. U.S. Geol. Surv. Terr. no. 2 (First Series), p. 70 (1874) [1].

Hab. MEXICO, Orizaba (*H. H. Smith & Godman*), Atoyac in Vera Cruz (*Schumann & H. H. Smith*), San Rafael in Vera Cruz (*Townsend*), Jalapa (*Godman*).

Thomas's description agrees practically with the form found so plentifully in the vicinity of Orizaba on the Atlantic slope of the eastern cordillera. It is readily separable from *M. pacifica* by its somewhat shorter and less obscure wings and the other characters given in the synoptic table.

BOÖTETTIX, Bruner.

Boötettix, Bruner, Proc. U.S. Nat. Mus. xii. pp. 57, 58 (Febr. 1890).
? *Gymnes*, Scudder, Psyche, v. p. 440 (Dec. 1890).

Although related to *Acrolophitus*, *Acrocara*, and *Machærocera*, *Boötettix* is very different from any of them. While the former are sluggish in their movements and do not stridulate loudly, the representatives of this genus are both extremely active and noisy. These latter also live above the ground and seldom alight upon it, preferring instead to cling to the twigs of a species of evergreen *Larrea* which seems to be their food-plant, and when disturbed they jump or fly from one plant to another if possible, so greatly do they seem to be attached to it.

1. **Boötettix argentatus,** Bruner. (Tab. I. figg. 24, 24 *a*, *b*, ♀.)

Boötettix argentatus, Bruner, Proc. U.S. Nat. Mus. xii. pp. 38, 59, t. 1. figg. 4, 5 [1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 256, t. 5. figg. 23, 23 *a*, *b* (1897) [2].
? *Gymnes punctatus*, Scudd. Pysche, v. pp. 440, 441 [3]; Cat. Orthopt. U.S. p. 21 (1900) [4].

Hab. North America, California [3], New Mexico, El Paso in Texas, Southern Arizona. —Mexico, Villa Lerdo in Durango (*Bruner* [1]), Chihuahua.

If, as I surmise, *Gymnes punctatus*, Scudd., proves to be the same species, the distribution is still greater—possibly coincident with that of the *Larrea* above referred to as its food-plant.

ERITETTIX, Bruner.

Stenobothrus, Thomas, Syn. Acrid. N. Amer. p. 80 (1873) (part.).
Gomphocerus, Thomas, loc. cit. p. 96 (part.).
Eritettix, Bruner, Proc. U.S. Nat. Mus. xii. p. 56 (1890) (part.); McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 217 (1897).

This is strictly a North-American genus, and it includes species that are very variable in colour and of rather wide distribution. As the name indicates, the various forms mature early in spring. Their nymphs live through the winter among bunch-grasses, and frequently hop about during midwinter when the temperature is sufficiently high to thaw them out. Old pastures and unburnt prairies are their favourite haunts. The males are provided with a fairly well-developed stridulating-area near the costal edge of the tegmina, and they can be heard during the warmer portion of almost any sunny day during spring, as they call to their mates. Several species have been recognized and an additional one is here described. The forms likely to occur within the region here dealt with may be distinguished as follows:—

Table for separating the Species of Eritettix.

A[1]. Lateral carinæ of the pronotum straight or very gently arcuate.
  b[1]. Tegmina and wings complete, reaching to (♀) or beyond (♂) the

tip of the abdomen. Supplemental carinæ of the pronotum nearly or quite as prominent as the median . . . . . [1. *virgatus*, Scudd.]

b^2. Tegmina and wings abbreviated, at least in the female (the male is not known). Supplemental carinæ of the pronotum less conspicuous than the median . . . . . 2. *brachypterus*, sp. n.

A^2. Lateral carinæ of the pronotum moderately arcuate before the middle.

b^1. Antennæ clavate . . . . . [3. *navicula*, Scudd.]

b^2. Antennæ acuminate, not clavate . . . . . [4. *variabilis*, Bruner.]

[1. **Eritettix virgatus**, Scudd.

Gomphocerus virgatus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. pp. 511, 512 (1875) [1]; Bruner, Rep. U.S. Ent. Comm. iii. p. 56 (1883) [2].

Eritettix virgatus, Bruner, Proc. U.S. Nat. Mus. xii. p. 56 (1890) [3]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 218, 219, t. 2. figg. 9, 9 *a*, *b* (1897) [4].

Eritettix vernalis, Bruner, Publ. Nebr. Acad. Sci. iii. p. 22 (1893) [5].

Hab. North America, Texas [1–5].

While not included in any of the collections coming from Mexico and examined by me, *E. virgatus* is almost certain to occur across the border.]

2. **Eritettix brachypterus**, sp. n.

A rather smaller species than the average, with the wings of the female (at least) abbreviated, only one-half the length of the abdomen. Antennæ not clavate; the lateral carinæ of the pronotum but gently arcuate, the supplemental carinæ much less conspicuous than in *E. virgatus*, which it most closely approaches.

Head not prominent, about as wide as the front edge of the pronotum; vertex scarcely as wide between the eyes as their smaller diameter, the fastigium short and provided with gently raised borders, the median carina prominent, as well as the supplemental carinæ on the occiput; lateral foveolæ subtriangular, not very prominent; frontal costa prominent, especially between the base of the antennæ, a little constricted above and with the sides gently approaching at the ocellus, otherwise broad, evenly expanding below, not sulcate. Antennæ with the joints a little flattened, but not at all clavate, somewhat shorter than the combined length of the head and pronotum. The latter somewhat wider behind than in front; the lateral carinæ gently arcuate a little in advance of the middle; supplemental carinæ much less prominent than either the median or the lateral, but still quite apparent; oblique carinæ of the sides well developed; front edge straight, the hind edge above very broadly angulate. Tegmina and wings about one-half as long as the abdomen, the former acuminate, and with the scapular area near the base considerably dilated. Hind femora normal, about reaching the tip of the abdomen. Tibiæ with 11 spines in the outer row, and with the inner apical claws very unequal in length—a characteristic, however, of all members of the genus.

General colour of single specimen examined green, varied with white, testaceous, ferruginous, and black. Lateral and oblique carinæ of the pronotum white, bordered with black or piceous. Occiput and the disc of the pronotum between the supplemental carinæ ferruginous, the remainder of the disc black, the sides below the oblique carinæ piceous. Tegmina with a narrow, subcostal, green line, the disc infuscated, the costal and dorsal fields cinereous. Hind femora greenish-testaceous, the upper edge of their outer face a little darkened. Hind tibiæ testaceous, somewhat darker apically. Antennæ ferruginous at the base, a trifle paler and tinged with green apically. Probably variable in colour.

Length of body, ♀, 20; of pronotum 3·15, of tegmina 6·75, of hind femora 11 millim.

Hab. Mexico, Ciudad in Durango 8100 feet (*Forrer*).

A single female.

[3. **Eritettix navicula,** Scudd.

Gomphocerus navicula, Scudd. Ann. Rep. Chief Eng. 1875, pp. 506, 507 (1876) [1]; Bruner, Rep. U.S. Ent. Comm. iii. p. 56 (1883) [2].

Eritettix navicula, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 218–220 (1897) [3].

Hab. North America, plains east of the Rocky Mountains [1–3].

Being an early spring insect, this locust has escaped most collectors, who generally visit the region during the summer and autumn. It should also occur on the grassy plains and tablelands of Northern Mexico.]

[4. **Eritettix variabilis,** Bruner.

Eritettix variabilis, Bruner, Proc. U.S. Nat. Mus. xii. p. 56 (1890) [1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 219 (1897) [2].

Opeia obscura, Scudd. & Ckll. Proc. Dav. Acad. Nat. Sci. ix. p. 25 (1902) (part.) [3].

Hab. North America, Silver City, New Mexico [1–3].

This species certainly occurs a little farther south across the Mexican border. The types were collected by Mr. Marsh in May. For some unaccountable reason, Scudder and Cockerell have mistaken *E. variabilis* for the very common *Opeia obscura,* Thomas, which inhabits the plains-region from the Mexican boundary to the Saskatchewan River.]

[EUPEDETES, Scudder.

Eupedetes, Scudder, Proc. Dav. Acad. Nat. Sci. ix. pp. 24, 25 (1902).

This is another genus which has been characterized since the synopsis of genera (*anteà,* pp. 26–34) was prepared. As it also occurs in a region well represented by forms belonging to the fauna of Mexico, I have thought it best to include it herewith as a footnote *.]

[MESOCHLOA, Scudder.

Eritettix, Bruner, Proc. U.S. Nat. Mus. xii. p. 56 (1890) (part.); McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 217 (1897).

Mesochloa, Scudder, Psyche, viii. pp. 234, 239 (1898).

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* EUPEDETES, Scudder.

"Of small size, compact, compressed. Head distinctly shorter than pronotum, in no way ascending, briefly truncate apically, the face considerably oblique; vertex with dorsal and approximate subdorsal rather coarse carinations. Fastigium extending beyond eyes as far as its basal breadth, apically rectangulate, but a little truncate; lateral foveolæ invisible from above, minute, trigonal; frontal costa narrow, plane, subequal, but expanding below the ocellus; eyes parallel to front, subelliptical, moderate; antennæ a little longer than the head and prothorax together, filiform, not slender, scarcely depressed. Pronotum rather short, nearly uniform, the lateral carinæ a little incurved in the middle, the median carina accompanied by a pair of supplementary median carinæ, the front margin truncate, the hind margin broadly obtusangulate; mesosternal lobes separated by a rather wide space, broader than long. Tegmina and

1. **Mesochloa abortiva,** Bruner.

Eritettix abortivus, Bruner, Proc. U.S. Nat. Mus. xii. pp. 56, 57, t. 1. figg. 8, 9[1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 220[2].

Mesochloa abortiva, Scudd. Psyche, viii. p. 239[3].

Hab. North America, Texas [1–3].

While this insect is not represented in any of the collections examined from south of the Rio Grande, it is exceedingly common in portions of South Central Texas, and no doubt occurs in similar localities across the line in Mexico.]

SILVITETTIX, gen. nov.*

Of medium size, the wings strongly abbreviated in both sexes. Head and pronotum rugose and coarsely punctulate. Antennæ with the joints a little flattened, in the female about equalling the combined length of the head and pronotum, in the male as long as or longer than the hind femora. Face strongly oblique; vertex well advanced in front of the eyes, the sides slightly rounded and provided with rather high carinæ, the disc sulcate, furnished with a median carina which continues over the occiput to the front edge of the pronotum, this carina generally accompanied from slightly in front of the eyes by well-marked supplementary carinæ. Pronotum scarcely constricted at the middle, the hind edge slightly widest; median carina not prominent, but equal throughout, cut back of the middle by the last transverse sulcus; lateral carinæ blunt, strongly approaching in the centre; anterior edge above squarely truncate, the hind margin subangulate; sides rather deep, the lower margin sinuate, dropping lowest immediately over the base of the front legs. Tegmina rather coarsely veined and with the scapular area dilated. Hind femora moderately robust, in the males greatly surpassing, in the females just about reaching, the tip of the abdomen. Tibiæ with 9 or 10 spines in the outer row, and with the inner apical spurs subequal. Valves of ovipositor rather stout and protruding. The tip of the abdomen of the male blunt; the last ventral segment short and acuminate; supra-anal plate plain and triangular, a little tumid in the middle near the base.

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wings slightly surpassing the abdomen and surpassed by the hind femora, which are moderately slender and compressed."

This genus has much the general aspect of *Amphitornus*, but has prominent lateral carinæ on the pronotum and supplementary carinæ on the head; the supplementary carinæ of the pronotum approach the median carina much more nearly than in *Eritettix*, from which it differs by its non-clavate antennæ.

1. **Eupedetes carinatus,** Scudd.

Eupedetes carinatus, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 25, t. 1. fig. 2[1].

"Testaceous, feebly marked with fuscous, beneath flavescent. Head with a broad longitudinal light fuscous stripe behind upper portion of the eyes, with one or two faint lines behind the eyes below it; antennæ flavo-testaceous; median carina of vertex heaviest in front and especially in the fastigium, which the supplementary carinæ do not enter. Pronotum testaceous, the lateral carinæ marking the outer limit of a light fuscous stripe; supplementary carinæ of pronotum less prominent than the median carina; lateral lobes with a slightly oblique, fuscous-edged, luteous stripe on the lower part of the metazona. Tegmina testaceous, flecked with fuscous mesially. Hind femora flavo-testaceous, faintly infuscated above; hind tibiæ flavous, with 10–11 black spines on either margin."

Length of body, ♂, 14·5, of antennæ 5·5, of pronotum 3, of tegmina 10·5, of hind femora 10 millim.

Hab. North America, La Trementina, New Mexico (*Miss Alice Blake*[1]).

One male. Is this not *Eritettix variabilis*, Bruner?

* An addition to the genera characterized in the Synopsis (*anteà*, pp. 26–34).

1. **Silvitettix communis,** sp. n.

Varying in colour from dark wood-brown to almost black on the head, pronotum, pleura, and sides of the abdomen in the male, but in the female frequently varied on the top of the head, pronotum, dorsal edges of the tegmina, and dorsum of the abdomen with ferruginous, testaceous, or cinereous, paler below. In some females the entire insect becomes much lighter-coloured. About half of the individuals of this sex have the upper edges of the lateral lobes of the pronotum black, but this longitudinal dark streak is in no way regulated by the lateral carinæ, since they are crossed both in front and behind the middle, passing forward on the head as far as the eyes and backward to the lower half of the tegmina. Hind femora in the female with the inner and outer faces, as well as the apex, obscure, the upper edge and sometimes the lower sulcus paler, often of a reddish hue; in the male the apex alone black, the remainder varying in colour from testaceous to brown, with a tinge of red shining through from inside. Tibiæ infuscated. Antennæ pale basally, infuscated apically. Labial and maxillary palpi pale yellow or testaceous.

Length of body, ♂ 13, ♀ 23; of antennæ, ♂ 11–13, ♀ 8; of pronotum, ♂ 3, ♀ 4·75; of tegmina, ♂ 5–6, ♀ 5; of hind femora, ♂ 10, ♀ 13 millim.

Hab. Costa Rica, Monte Redondo and Juan Viñas (*L. Bruner, M. A. Carriker, Jr., M. Cary, and C. F. Underwood*), Pozo Azul (*M. A. Carriker, Jr.*).

This short-winged locust is very common in small openings and about the edges of heavy woods, where it is to be found among the fallen leaves and rank vegetation. There are evidently two or more generations of it during the year, since large numbers of the half-grown nymphs occurred along with the mature insects taken late in February and throughout March. It seems to be rather general in its distribution, as the localities from which specimens were received range from the eastern slope nearly to the Pacific, and from near the sea-level to almost or quite 4500 feet above.

OCHROTETTIX, gen. nov.

Head with the occiput quite long; the vertex, which is a little wider than the shortest diameter of the eyes and projects forward about the same distance, tumid and provided with a well-defined median carina, this being continued over the back of the head to the front edge of the pronotum, the sides rounded as in *Mermiria*, without lateral foveolæ; face strongly oblique, the frontal costa quite prominent between the antennæ, narrow, with well-defined bounding carinæ, continuous to the clypeus, a trifle widened below, sulcate throughout. Antennæ with the basal joints much flattened, decidedly ensiform in ♀, scarcely so in ♂, nearly (♀) or quite (♂) as long as the hind femora. Eyes of medium size, elongate-pyriform, oblique. Pronotum almost cylindrical, about as wide in front as behind, the lateral carinæ wanting or occupying the place of supplemental discal carinæ, which latter are nearly parallel and as distinct as the median, and continue upon the occiput as faint parallel carinæ to the eyes; front and hind edges of the disc broadly rounded or subtruncate, the lower edges of the sides nearly straight; transverse sulci very obscure, the last decidedly behind the middle. Tegmina abbreviate in both sexes, the apex rounded, in the female the dorsal edges scarcely touching, but overlapping in the male. Hind femora surpassing the tip of the abdomen in both sexes, only moderately robust. Hind tibiæ with 12 or 13 spines in the outer row, the apical spurs subequal. Sexes very unequal in size.

1. **Ochrotettix salinus,** sp. n. (Tab. I. figg. 4, 4 *a*, ♂; 5, 5 *a*, ♀.)

The type of the genus, the only species known, has the fastigium of the vertex provided at the sides and front with a slightly raised blunt carina; the face when seen from the side a little hollowed just above the ocellus. Tegmina in the female reaching to about the middle of the second abdominal segment, those of the male a trifle more than half as long as the abdomen. The general colour, apart from a very faintly

darker band on each side of the occiput and following the outer edge of the supplemental carinæ to the hind edge of the pronotum, and, to some extent, on the basal half of the male tegmina, pale ochraceous. Eyes a trifle darker. Antennæ faintly ferruginous. Spines of the hind tibiæ, and the valves of the ovipositor of the female, black-tipped.

Length of body, ♂ 18, ♀ 32; of antennæ, ♂ 13, ♀ 12·5; of head, ♂ 3·7, ♀ 5; of pronotum, ♂ 3·5, ♀ 6; of tegmina, ♂ 7, ♀ 5; of hind femora, ♂ 12, ♀ 13 millim.

Hab. MEXICO, Salina Cruz, Tehuantepec (*C. C. Deam*).

LEUCONOTUS, gen. nov.*

Body with the sides slightly compressed; face rather oblique; antennæ (♂) shorter than the hind femora, with the joints somewhat flattened, but not ensiform. Pronotum very gently expanding behind; the lateral carinæ fully as prominent as the median and very near to it throughout, parallel on the anterior and but slightly divergent on the posterior lobe; last transverse sulcus considerably behind the middle and quite profound.

Head large, the occiput on the same plane with the disc of the pronotum; eyes elongate-pyriform, oblique, separated above by less than their short diameter; vertex projecting in front of the eyes a little more than its basal width, acuminate, provided with gently raised borders, a longitudinal median carina, and short triangular basal foveolæ which are invisible from above. Face long, when viewed from the side nearly straight, the frontal costa prominent between the antennæ, continuous and sulcate to the clypeus, the sides diverging gently below the ocellus. Pronotum with the anterior margin very gently rounded, the hind edge broadly angulate, and the lower lateral edges sinuate as in *Ochrotettix*. Tegmina abbreviate, about two-thirds as long as the abdomen, subacuminate, the scapular area not greatly dilated and provided with few veins. Hind femora robust, reaching considerably beyond the tip of the abdomen. Hind tibiæ provided with 10 spines in the outer row; the inner apical claws about equal. Apex of abdomen blunt, the last ventral segment short, acuminate, directed upward; the supra-anal plate plain, triangular, with a broad shallow sulcus at the base; cerci rather slender, acuminate.

1. **Leuconotus biolleyi,** sp. n.

The insect which is the type of the genus is represented by five males, and may be readily recognized by having the occiput, the disc of the pronotum, and the dorsal edges of the closed tegmina uniformly pale testaceous. Face, sides of head, body, pronotum, and tegmina brown, heavily mottled with black. Underside pale, the abdomen above with a ferruginous tinge. Hind femora pale, without definite bands, but more or less varied with black; the apex and base of the tibiæ dark, the latter with a pale annulus near the base. Anterior and middle feet also infuscated. Antennæ pale on the basal half, the apex dark.

Length of body, ♂, 15; of antennæ 7, of pronotum 3·5, of tegmina 6·5, of hind femora 10 millim.

Hab. COSTA RICA, Rio Grande 1800 feet (*Bruner*), San Mateo 800 feet (*Biolley*).

Four males from the Rio Grande and one from San Mateo. The female is as yet unknown, but, judging from the structure of allied forms, is apt to be considerably larger and more robust than the males here described. The species is a winter one, and seems to be confined to the more arid sections of the western or Pacific slope, where it frequents the openings and edges of open groves along watercourses.

* An addition to the genera characterized in the Synopsis (*anteà*, pp. 26–34).

AMPHITORNUS, McNeill.

Stenobothrus, Thomas, Prelim. Rep. U.S. Geol. Surv. Mont. p. 465 (1872); Syn. Acrid. N. Amer. p. 83 (1873) (nec Fischer).

Amphitornus, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 223 (1897).

This small genus is confined to the western half of North America, where it is represented by two recognized species which may be separated as follows:—

A[1]. Median carina of the pronotum severed decidedly behind the middle . 1. *ornatus*, McNeill.

A[2]. Median carina of the pronotum cut by the last transverse sulcus but little behind the middle . . . . . [2. *bicolor*, Thom.]

1. **Amphitornus ornatus**, McNeill. (Tab. I. figg. 13, 13 *a*, ♀.)

Amphitornus ornatus, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 225 [1].

Stenobothrus coloradus, Koebele, Bull. no. 22, Div. Ent., U.S. Dept. Agric. p. 94 (1890) [2].

Hab. North America, Western Texas, Southern New Mexico, Arizona, and California [1 2].—? Mexico, Durango.

There are no examples of this species before me from Mexico territory, but some years ago I noticed an insect in numbers in the State of Durango which appeared to belong to it. Unfortunately none were taken at the time.

A. bicolor, Thomas, is more northern in its distribution.

OPEIA, McNeill.

Opeia, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 214 (1897).

This is another strictly American genus that seems to be restricted to the arid and semiarid regions of the tablelands of Mexico and the south-western portions of the United States. While the collections at hand indicate rather numerous forms, but two of them appear to occur beyond the Mexican border within the United States. One of these, *O. testacea*, Scudder, is rather local in its distribution, and, so far as recorded, is confined to the southern half of California. The other, *O. obscura*, Thomas, is distributed over the plains from the Rio Grande in the south to the Saskatchewan in the north, and is partial to certain low-growing grasses. The Mexican forms are mostly short-winged, and with a single exception appear to be slightly more robust than the two just mentioned.

There is little doubt that some close collecting at various points in the plateau-regions of Mexico would bring to light several additional species. The known forms, along with those now described, may be distinguished as follows:—

Table for separating the Species of Opeia.

A[1]. Tegmina fully developed, reaching at least the tip of the abdomen, their apices rounded.

b[1]. General colour darker in the female, sometimes green, varied and

streaked with brown and black. Discal field of tegmina furnished with a row of dark brown or black spots . . . . . [1. *obscura,* Thom.]

b^2. General colour uniformly light testaceous. Discal field of tegmina concolorous.

c^1. Lateral carinæ of the pronotum gently approaching in front, the last transverse sulcus scarcely visible . . . . . 3. *pallida,* sp. n.

c^2. Lateral carinæ of the pronotum parallel, the last transverse sulcus distinct . . . . . [4. *testacea,* Scudd.]

A^2. Tegmina abbreviated, seldom more than half the length of the abdomen in the female, a trifle longer in the male, generally acuminate.

b^1. More slender. The pronotum about as wide in front as behind. Median carina of vertex prominent even on occiput. Tegmina often with much green . . . . . 2. *imperfecta,* sp. n.

b^2. More robust. The pronotum slightly broadest behind. Median carina of vertex disappearing on the occiput.

c^1. Smaller. Less varied with dark and light stripes. Tegmina touching or overlapping above.

d^1. Lateral carinæ of the pronotum gently sinuate, the anterior lobe constricted both at the sides and at a little behind the anterior margin above. Tegmina of the female just touching above . 5. *mexicana,* sp. n.

d^2. Lateral carinæ of the pronotum straight, the anterior lobe not constricted. Tegmina of the female slightly overlapping above. 6. *palmeri,* sp. n.

c^2. Larger. Much varied with dark and light stripes. Tegmina not quite touching above . . . . . 7. *lineata,* sp. n.

[1. **Opeia obscura,** Thomas.

Oxycoryphus obscurus, Thomas, Rep. U.S. Geol. Surv. Mont. p. 446 (1871) [1]; Syn. Acrid. N. Amer. p. 73 (1873) [2].

Opeia obscura, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 215, 216, t. 2. figg. 7, 7 *a, b, c* (1897) [3]; Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 45 (1899) [4].

Hab. North America [1–4], Plains-regions of the Saskatchewan River, Texas, New Mexico, Arizona.

By far the most widely distributed species of the genus. Although not represented in the collections coming from south of the Mexican boundary, it is known to occur abundantly in the adjacent regions to the north, and it is quite probable, therefore, that it inhabits portions of Northern Mexico as well.]

2. **Opeia imperfecta,** sp. n.

Very similar in size, colour, and general appearance to *O. obscura*, but with abbreviated tegmina and wings. It also differs from that insect in its somewhat more slender form, slightly longer pronotum, the more advanced vertex, and rather strongly sloping face. The frontal costa is a little wider above the ocellus in *O. imperfecta* than in *O. obscura*, and has its walls sharper and more nearly parallel. The pronotum of the female has its lateral carinæ nearly or quite as widely separated in front as behind, while in this sex of *O. obscura* they perceptibly converge anteriorly. The tegmina and wings of *O. imperfecta*

are about one-half (♀) or nearly three-fourths (♂) as long as the abdomen, their apices pointed or acuminate, and are provided in the discal field with a row of more or less blended fuscous blotches. The general colour varies from pale grass-green to brownish-testaceous above, banded on the sides of the head and pronotum with darker. Sides of the head behind the middle of the eyes marked by a narrow white streak. The lateral carinæ of pronotum also pale. Hind femora with the upper portion of the outer disc, and the tips of the hind tibiæ, somewhat infuscated. Lower side dirty or yellowish white.

Length of body, ♂ 13·5, ♀ 22; of pronotum, ♂ 2·5, ♀ 4; of tegmina, ♂ 6, ♀ 8; of hind femora, ♂ 8·75, ♀ 12·5 millim.

Hab. North America, South-west Texas (*Schaupp*).—Mexico, Jimulco and Comancho in Zacatecas (*Bruner*).

Found in Mexico in November.

3. **Opeia pallida,** sp. n.

Most closely related to *O. testacea*, Scudder, from which it differs in its somewhat larger size and more robust form, the shorter and broader vertex, the less pointed eyes, prominent frontal costa, and oblique face, and in having the lateral carinæ of the pronotum somewhat converging in front, instead of parallel as in that insect.

The colour of the two forms is very similar, both being pale testaceous, with only faint indications of the characteristic light and dark streaks.

Length of body, ♀, 26; of pronotum 4, of tegmina 16, of hind femora 15 millim.

Hab. Mexico, Montelovez in Coahuila (*Dr. Palmer, in coll. Scudder*).

A single male. This may be only a variety of *O. testacea*, but coming from the eastern or Atlantic slope, and differing in the various points of structure mentioned above, I have thought best to treat it as distinct. Both these insects undoubtedly frequent alkali or desert-like localities, if we are to judge by their uniformly pale colour.

[4. **Opeia testacea,** Scudder.

Opeia testacea, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 46 (1899)[1]; Proc. Dav. Acad. Nat. Sci. viii. p. 22 (1900)[2].

Hab. North America, Southern half of California[1 2] (*colls. Bruner, Morse, and Scudder*).]

5. **Opeia mexicana,** sp. n. (Tab. I. figg. 15, 15 *a*, ♀.)

Very similar to, if not the same as, the following species, but differing from it in its rather darker colour, the more rounded and somewhat channelled vertex just behind the fastigium, the slightly undulate lateral carinæ of the pronotum, and the narrower tegmina, which in the present insect scarcely touch at their dorsal edges.

Length of body, ♀, 23; of pronotum 4·25, of tegmina 6, of hind femora 13·5 millim.

Hab. Mexico, Tlalpam, near city of Mexico (*coll. Bruner*).

A single female.

6. **Opeia palmeri,** sp. n.

A brachypterous, moderately robust species, in which the prevailing colour is brownish-testaceous, varied by longitudinal brown bands.

Head very slightly broader than the front edge of the pronotum, the occiput on the same plane as the disc of the latter; eyes not at all prominent, a little longer than (♂), or about equal to (♀), the length of the portion of the cheeks below them; vertex provided with a gently raised border and a well-defined median carina, the lateral edges scarcely foveolate, and meeting at the fastigium in a right angle in the female or in an obtuse angle in the male. Antennæ with the basal joints considerably flattened in both sexes, but scarcely ensiform even in the female, as long as the head and pronotum together in the male, about reaching the last transverse sulcus in the female. Frontal costa of medium width and gradually broadening below, sulcate in the male, nearly plane in the female. Face when viewed from the side not very oblique, less so than in *O. obscura* and *O. testacea*. Pronotum a little wider behind than in front, the lateral carinæ evenly converging in the female, parallel from the principal sulcus in the male, but divergent on the posterior lobe. Tegmina about half as long as the abdomen, acuminate, and with their dorsal edges slightly overlapping. Hind femora broad on the basal two-thirds, slender beyond; tibiæ with 10 spines on the outer row.

Sides of the head and the upper half of the sides of the pronotum provided with a gradually broadening brown band. Disc of the tegmina with a row of small quadrate dusky dots. Upper edge of the outer face of the hind femora also dark. In the single female specimen at hand the median carina of the pronotum and a narrow median line on the occiput to the fastigium are dark brown. Tips of the antennæ and feet a little darker than the general colour.

Length of body, ♂ 15, ♀ 20; of pronotum, ♂ 3, ♀ 4; of tegmina, ♂ 6, ♀ 7; of hind femora, ♂ 10, ♀ 13 millim.

Hab. MEXICO, Sierra de San Miguelito (*Dr. Palmer, in coll. Scudder*).

One male and one female.

7. **Opeia lineata,** sp. n.

Large and robust for the genus to which it belongs; much varied with light and dark lines. The tegmina greatly abbreviated and with the dorsal edges not touching.

Head moderately large, about as wide as the front edge of, and nearly as long as, the pronotum; the occiput smooth, evenly rounded; vertex about as wide as the shortest diameter of the eyes, roundly depressed, the antero-lateral carinæ blunt, with the surface just inside gently sulcate, furnished with a blunt longitudinal median carina, which becomes nearly obliterated about midway to the front edge of the pronotum. Face only gently oblique, the frontal carina broad, shallow, sulcate, evenly expanding downward, reaching the clypeus, its lateral walls coarse. Eyes subpyriform, about as long as the portion of the cheeks below them, not prominent. Antennæ acuminate, short. Pronotum slightly widest behind, gently compressed at the middle, the lateral carinæ gradually approaching anteriorly, the transverse sulci dim, the last cutting all three carinæ, situated about one-third the distance from the hind edge, the latter scarcely angulate. Tegmina short, acuminate, reaching the apex of the third abdominal segment, their dorsal edges not attingent. Hind femora rather robust, as long as the abdomen.

The general colour of the single specimen at hand is light testaceous, much varied with dusky streaks. Occiput provided with a broad, median, longitudinal light band that extends from the fastigium to the posterior edge of the pronotum, bounded on either side by one of black, the latter about one-half the width of the former. Lateral carinæ of the pronotum light-coloured and continued on the head as a narrow testaceous stripe to the posterior edge of the eyes; below this there is a narrow black line, followed by a rather broad infuscated area, then a light one, and again a second dusky one. Lower edge of the pronotum and cheeks broadly testaceous. Lateral facial carinæ light-coloured, bordered very narrowly with black. Sides of the pronotum just behind the last sulcus and midway from the top to the bottom provided with a short, raised, smooth, white ridge. There is also a narrow, black-bordered, dirty-white line on each side of the head behind the middle of the eyes. Pleura streaked with light and

dark. The tegmina have the costal area green, the disc fuliginous, with the dorsal angle pale, followed above by dusky. Abdomen longitudinally streaked with dark and light. Hind femora with the upper half of the outer disc dark, the lower half light; the upper and lower edges, except the carinæ which are more or less brownish, light; the knees infuscated. Tibiæ and tarsi more or less dusky.

Length of body, ♀, 27; of pronotum 4·60, of tegmina 7, of hind femora 14 millim.

Hab. Mexico, Sierra de San Miguelito (*Dr. Palmer, in coll. Scudder*).

A single female.

AMBLYTROPIDIA, Stål.

Amblytropidia, Stål, Recens. Orthopt. i. p. 107 (1873).

The insects which fall into this genus, as limited by Stål, nearly all belong to Middle America, and, judging from the forms now before the writer, are quite numerous. With but few exceptions, their prevailing colour is some shade of brown, inconspicuously varied with darker or lighter streaks or mottlings. Their habits are similar to those of the members of the genera *Orphula*, *Orphulella*, &c., hence the various species may be sought for in grassy localities along streams and at the edges of groves or woodlands. Although not rare, none of the forms seem to be sufficiently abundant to cause damage to vegetation. They may be recognized in part by the following analytical table:—

Table for separating the Species of Amblytropidia.

A¹. Median carina of vertex quite prominent. Last transverse sulcus of the pronotum situated plainly behind the middle.

*b*¹. Robust, for the most part pale-coloured. Tegmina of the female not surpassing the tip of the abdomen, the latter concolorous above.

*c*¹. Antennæ of the female (those of the male always more elongate) a trifle longer than the head and pronotum united. Tegmina provided with fuscous spots.

*d*¹. Smaller. [Brazil, Panama?] . . . . . [1. *ferruginosa*, Stål.]

*d*². Larger. Hind tibiæ with 13 spines in the outer row. [Vera Paz and ? E. Mexico.] . . . . . 2. *magna*, sp. n.

*c*². Antennæ of the female considerably shorter than the head and pronotum united. Tegmina variable in colour.

*d*¹. Tegmina pale testaceous, without fuscous spots or longitudinal pale stripes. Knees of the male at least dark-coloured. [Argentina.] . . . . . [3. *australis*, Bruner.]

*d*². Tegmina mottled, or with both fuscous spots and longitudinal pale stripes, often with much green. [Brazil, Paraguay.] . . . . . [4. *vittata*, Giglio-Tos.]

*b*². More slender, rather dark-coloured. Tegmina of the female surpassing the tip of the abdomen. Abdomen of the male, at least, bright ferruginous or orange.

c^1. Colour uniform dusky brown, the female with distinctly flecked tegmina.
d^1. Hind tibiæ 12–13-spined in the outer row. [British Guiana and Trinidad.] . . . . . [5. *trinitatis*, sp. n.]
d^2. Hind tibiæ 15–16-spined in the outer row. [West coast of Central Mexico.] . . . . . 10. *elongata*, sp. n.
c^2. Colour dark olive-brown in the male. Hind tibiæ 11–12-spined in the outer row. [E. Mexico.] . . . . . 6. *auriventris*, Bruner.
A^2. Median carinæ of the vertex less prominent. Last transverse sulcus of the pronotum situated about the middle.
b^1. Hind tibiæ provided with 15–19 spines in the outer row.
c^1. Rather robust. Colour variable. [Nicaragua and Costa Rica.] . . . . . 7. *costaricensis*, sp. n.
c^2. More slender. The colour rather uniform.
d^1. Anterior portion of the disc of the pronotum narrower than the hind portion; lateral carinæ in the male concolorous, the disc and sides not infuscated. [Mexico.] . . . . 8. *mysteca*, Sauss.
d^2. Anterior portion of the disc of the pronotum about equal in its width to the hind portion; lateral carinæ in the male pale, the disc and sides infuscated. [Mexico.] . . 9. *ingenita*, sp. n.
b^2. Hind tibiæ provided with but 14 spines in the outer row. [Eastern United States southward.] . . . . . [11. *occidentalis*, Sauss.]

[1. **Amblytropidia ferruginosa**, Stål.

Amblytropidia ferruginosa, Stål, Recens. Orthopt. i. p. 107 (1873) [1].

Hab. Brazil [1].

Not recognized by me. Various writers have reported this insect from localities other than that from which Stål's type came, in some instances, without doubt, incorrectly: Giglio-Tos (Bollet. Mus. Zool. Torino, ix. no. 184, p. 13, and xii. no. 302, p. 25) credits it to Argentina, where *A. australis*, Bruner, occurs and seems likely to be the insect referred to, and also (*op. cit.* no. 301, p. 2) to "Punta de Sabana, Colon, and Tin-tin," on the Isthmus of Panama, and mentions differences that exist in the size and structure of the specimens which he has examined. Perhaps this last reference refers to still another species in addition to those tabulated above ?]

2. **Amblytropidia magna**, sp. n.

Large, robust, the general colour almost uniform rusty-brown, the costal area of the tegmina a trifle darker and with a few scattered pale fuscous dots. Tegmina rather broad, the basal portion of their discal field thickly veined, but without any indication of an intercalary vein as is found in most of the other species of the genus. Head large, the occiput somewhat ascending above the plane of the pronotum; antennæ a trifle longer than the head and pronotum together; the median carina of the vertex prominent and continuous over the occiput almost to the front edge of the pronotum. The pronotum with the disc flat,

a trifle narrowed in front, the last transverse sulcus a little behind the middle. Hind femora as long as the tegmina, which reach the tip of the abdomen, moderately robust at the base.

Length of body, ♀, 36; of antennæ 12, of pronotum 7, of tegmina 27, of hind femora 24 millim.

Hab. MEXICO, Medellin in Vera Cruz (*Rev. T. Heyde*); GUATEMALA, Panzos in Vera Paz (*Conradt*).

A female from Panzos, and a male from Medellin.

This insect is considerably larger than any other representative of the genus that has thus far come into my hands. The absence of all indications of an intercalary vein on the tegmina, as well as its robust build, readily separates it from all the other known forms. The female described, selected as the type, shows signs of having been in spirits, but this has not greatly modified its structure nor changed its colour.

The male from Medellin, on account of its size and the number of spines in the outer row of the hind tibiæ (13), may belong here. It is of a uniform pale brown colour, inclining to olive on the head, pronotum, and pleura. The antennæ are as long as in *A. auriventris* and *A. trinitatis*, and the hind femora, together with the base of the tibiæ, are dark. The abdomen, however, lacks the orange or ferruginous tinge to be found in both those species, being, instead, uniformly pale. Its length is 25·5, antennæ 13, tegmina 17, and hind femora 15 millim.

[3. **Amblytropidia australis,** Bruner.

Amblytropidia ferruginosa, Giglio-Tos, Bollet. Mus. Zool. ed Anat. Comp. Univ. Torino, ix. no. 184, p. 13 (Sept. 1894) [1]; op. cit. xii. no. 302, p. 25 (Aug. 1897) (nec Stål) [2].

Amblytropidia australis, Bruner, Locusts of Argentina, p. 32 (1900) [3].

Hab. ARGENTINA [1–3].

This species occurs in Argentina along the Rio Parana to its mouth; also northward and westward to the Bolivian frontier, if we accept Professor Giglio-Tos's identification as recorded above.]

[4. **Amblytropidia vittata,** Giglio-Tos.

Amblytropidia vittata, Giglio-Tos, Bollet. Mus. Zool. ed Anat. Comp. Univ. Torino, ix. no. 184, p. 13 (1894) [1].

Hab. BRAZIL; PARAGUAY [1].

A. vittata occurs at São Paulo, Brazil, as well as in Paraguay, several specimens from the former locality having been received by me. Both this and the preceding species can be recognized by their unusually short antennæ, as well as by the generally pale testaceous colour, more or less relieved by green, dark brown, or black streaks on the head, pronotum, and tegmina. Other characteristics which distinguish them are mentioned in the synoptic table.]

[5. **Amblytropidia trinitatis,** sp. n.

Apparently closely related to *A. auriventris*, Bruner, from which it differs in its darker colour, the greater number of spines in the outer row of the hind tibiæ, the somewhat slenderer antennæ, the larger head, more ascending occiput, and the more prominent and profoundly sulcate frontal costa. There is also a great discrepancy in the size of the two sexes in the present species, but whether this characteristic is also true of *A. auriventris* is not known to me, since only the male of it has thus far been seen.

Head large, occiput somewhat bulging and slightly ascending above the plane of the pronotum; eyes large, prominent, considerably longer than the infra-ocular portion of the cheeks; vertex nearly (♂) or quite (♀) as wide as the shortest diameter of one of the eyes, anterior lateral margins and median carina prominent, the latter continuing backwards over the occiput to the front edge of the pronotum. The pronotum rather short, flat above, a trifle narrowed in front, and with the surface much as in *A. auriventris*; last transverse sulcus situated plainly behind the middle. Tegmina also as in that species. Hind femora moderately robust; hind tibiæ with 12 or 13 spines in the outer row.

General colour dark ferruginous-brown, the tegmina of the female decidedly and profusely mottled with darker markings. The male with indications of a paler streak on the occiput and pronotum; also with blackened, reddish-testaceous hind femora, some specimens showing decided dusky bands along the upper edge of their outer face; tibiæ black at the base and infuscated apically. Abdomen above and on the last three segments below bright ferruginous, almost orange. Antennæ black. In the female there is a faint trace of dusky bands along the upper margins of the sides of the pronotum; and in some specimens the disc, along with the dorsal portion of the tegmina, is paler than the general coloration of the insect.

Length of body, ♂ 18, ♀ 30; of antennæ, ♂ & ♀, 9; of pronotum, ♂ 3·5, ♀ 6; of tegmina, ♂ 13, ♀ 21; of hind femora, ♂ 12, ♀ 18 millim.

Hab. British Guiana, Demerara (*Crew*); Trinidad (*Chipman*).

Seven males and three females from Trinidad, found between December and March, and four males and one female from Demerara.]

6. **Amblytropidia auriventris,** McNeill.

Amblytropidia auriventris (Bruner MSS.), McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 227 (1896) [1].

Amblytropidia mysteca, Rehn, Trans. Amer. Ent. Soc. xxix. p. 9 (1902) (part.) [2].

Rather below the medium size, but, nevertheless, moderately robust in stature; with unusually long and heavy antennæ. Dark olive-brown, with the lower sulcus of the hind femora and the dorsal half of the abdomen orange-red, the latter somewhat the brighter. Superficially resembling the male of *A. ingenita,* which is here described, but readily separated from that species by the characters given in the table.

Head of medium size; the eyes large and bulging, considerably longer than the cheek below them; vertex about one-half as broad as the greatest diameter of the eyes, with prominent median carina and bounding walls; face fairly oblique, a little rounded when viewed from the side, the frontal costa prominent, of nearly equal width throughout, and profoundly sulcate in the vicinity of the ocellus, above provided with a median carina, which extends to below the insertion of the antennæ. Pronotum rather short, the disc with the sides subparallel; median carina fairly prominent, cut by the last transverse sulcus distinctly behind the middle; lateral carinæ distinct, but not prominent; posterior lobe closely and coarsely punctulate, the disc both in front and behind provided on each side with two or three rather coarse, short, longitudinal wrinkles. Tegmina of medium width, coarsely but not profusely reticulate on the basal portion, with indications of an intercalary vein, the costal edge broadly rounded. Hind femora long, robust, extending considerably beyond the tips of the closed tegmina. Hind tibiæ with but 11 or 12 spines in the outer row.

Besides the general colour as given above, this insect is provided with a light band on each side of the vertex and occiput, which is more or less plainly continued upon the disc of the pronotum just inside the lateral

carinæ. The hind femora are also lighter coloured than the remainder of the body, and with dusky dots along the upper carinæ. Antennæ pale olive at the base, but becoming almost black apically.

Length of body, ♂, 17·5; of antennæ 11, of pronotum 3·5, of tegmina 13–14, of hind femora 12·25 millim.

Hab. MEXICO, Atoyac and Orizaba in Vera Cruz (*Bruner*).

Several males, taken by myself during late November and December at the margins of woods. McNeill did not describe this species, but only indicated its relationship with *A. occidentalis*, Sauss., by means of a short table.

7. **Amblytropidia costaricensis,** sp. n.

? *Amblytropidia ferruginosa,* Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. p. 64, t. 3 (1895) [1].

A medium-sized, robust insect, of variable colour, in which the antennæ are quite short in both sexes, and the tegmina may be either quite destitute of or thickly marked with fuscous dots.

Head of medium size, no wider than the pronotum, the face not greatly oblique; eyes rather large; vertex broad, short, rounded, scarcely sulcate anteriorly, the bounding walls blunt, but not bulging, the median carina inconspicuous, but visible to the front edge of the pronotum in most specimens; frontal costa very broad, of equal width throughout, prominent above, less so below, scarcely sulcate even at the ocellus, but provided with coarse punctures for about two-thirds its length. Pronotum short, broad, the disc very slightly narrowed in front; median carina coarse and equally prominent throughout, cut by the last transverse sulcus about the middle; sulci inconspicuous; hind margin of the disc decidedly, but obtusely angulate, the angle not rounded. Tegmina of moderate width, feebly and sparsely reticulate, with a partially developed intercalary vein, reaching beyond the apex of the abdomen, and, in most specimens, a trifle surpassing the tips of the hind femora. The latter flattened but quite broad at the base, reaching beyond the tip of the abdomen in both sexes; hind tibiæ provided with 15–18 or 19 spines in the outer row.

General colour of the face, the lower portion of the sides, the upper edges of the hind femora, and below, usually pale testaceous, but sometimes dull ferruginous, in dark specimens being uniformly of that colour, save that the tegmina, thorax, and hind femora are more or less marked with fuscous and black dots of different sizes. The lighter-coloured individuals may have the entire top of the head, the pronotum, and the tegmina above the costal area uniformly pale testaceous, or cinereous, varied with blotches and streaks of brown or dull black, or they may even have all of this portion black. In most of these colour-variations there is a decided dusky line extending backward from the middle of the eye along the upper edge of the sides of pronotum and continued on the costal area of the tegmina nearly to their apices. The upper edges of the outer and inner discs of the hind femora are usually also infuscated, the latter more deeply so and crossed by two narrow oblique light fasciæ; tibiæ infuscated apically.

Length of body, ♂ 19, ♀ 27–28; of antennæ, ♂ 6, ♀ 5; of pronotum, ♂ 4, ♀ 5·5; of tegmina, ♂ 17, ♀ 22–23; of hind femora, ♂ 13·5, ♀ 18 millim.

Hab. NICARAGUA, Greytown (*Shimek*); COSTA RICA, San José (*Biolley, Underwood*).

The specimens from Greytown are slightly larger than the others and have from 16–19 spines in the outer row of the hind tibiæ (instead of 15–18), but otherwise do not differ greatly from the Costa Rican insects.

8. **Amblytropidia mysteca,** Sauss. (Tab. I. figg. 14, 14 *a*, ♀.)

Stenobothrus (*Rhammatocerus*) *mystecus,* Sauss. Rev. et Mag. Zool. 1861, p. 317 [1]; Orthopt. Nova Amer. ii. p. 20 (1861) [2].

Stenobothrus mystecus, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. pp. 755, 756 (1870) [3]; Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 205 (1873) [4].
Amblytropidia mysteca, Rehn, Trans. Amer. Ent. Soc. xxix. p. 9 (1902) [5].

Hab. MEXICO [1 2 3], Presidio in Sinaloa (*Forrer*: ♀), Cocula (*Barrett*: ♀), Orizaba (*H. H. Smith & Godman*: ♂ ♀), San Rafael in Vera Cruz (*Townsend*: ♂ ♀).

Owing to the great similarity in the general appearance of several of the species belonging to this genus, there is no doubt but that more or less confusion exists in their synonymy. Saussure's type, a female, is before me as I write. It may be recognized by the characters mentioned in the synoptic table of species which is given above. There are also specimens of this locust in the collection of the U.S. National Museum.

9. **Amblytropidia ingenita**, sp. n.

Rather closely related to *A. mysteca*, Sauss., but differing from it in a number of details, such as the comparative number of spines in the outer row on the hind tibiæ, the structure of the occiput, pronotum, and hind femora, and in the general coloration, wing-length, habitat, &c.

Of medium size. The head a trifle broader than the front edge of the pronotum; vertex about as wide as the shortest diameter of one of the eyes, short, rounded, the lateral edges and carina not prominent, but the latter extending back over the much roughened occiput to the front edge of the pronotum; face, when viewed from the side, rounded, not greatly receding; frontal costa very wide, a little narrowed above, scarcely sulcate, but provided with a row of punctures along each side, the bounding walls blunt. Antennæ, even in the male, not reaching the apex of the pronotum. The latter short; the disc flat and of equal width throughout, the median carina not much more prominent than the lateral, cut in the middle by the last transverse sulcus; anterior edge broadly rounded, the posterior edge angled. Tegmina straight, of medium width, the transverse veinlets weak, not very numerous on the basal portion; intercalary vein present in the distal portion of the area, prominent. Hind femora broader than usual on the basal half where the upper and lower carinæ are conspicuously developed, quite slender apically; the tibiæ 15-spined in the outer row.

General colour brownish-cinereous, profusely streaked and mottled with plain brown and black. Sides of the head back of the eyes, the upper half of the lateral lobes of the pronotum, the upper portion of the pleura, and the three basal segments of the abdomen, along with the costal area of the tegmina, generally dusky. In the male (always) and the female (sometimes) there is present a narrow testaceous band, reaching from the front edge of each eye above across the occiput to the pronotum, where it continues just inside the lateral carinæ and passes to the angle of the closed tegmina, which it follows for some distance. Abdomen, apart from the lateral dusky patches on the basal segments, pale, in the male more or less decidedly tinged above with orange. Hind femora testaceous, varied on the upper portion of the inner and outer discs by the presence of a dusky patch. Hind tibiæ apically, together with all the tarsi, infuscated.

Length of body, ♂ 18–19, ♀ 24; of antennæ, ♂ 6, ♀ 6; of pronotum, ♂ 3·5, ♀ 4·75; of tegmina, ♂ 14–16, ♀ 19·5; of hind femora, ♂ 13, ♀ 15·5 millim.

Hab. MEXICO, Orizaba (*Bruner*: ♂), Chilpancingo in Guerrero 4600 feet (*H. H. Smith*: ♂ ♀), Cuernavaca in Morelos (*H. H. Smith, Barrett*: ♂ ♀).

While the present species has been taken at Orizaba, its range seems to be more southerly and preferably in regions drained towards the Pacific, in this latter district almost or entirely replacing *A. mysteca*, which is nearly restricted to the Atlantic slope. The insect has been met with in the months of May, June, and December.

10. **Amblytropidia elongata,** sp. n.

Of large size, but moderately slender, with long hind legs. General colour almost uniformly dark brown, but with a few dusky spots sprinkled over the disc and dorsal portions of the tegmina. Antennæ of the female reaching to about the last transverse sulcus of the pronotum, which is situated considerably beyond the middle. Head about as wide as the front edge of the pronotum, rather coarsely punctate and otherwise roughened; the occiput scarcely, or not at all, ascending, fully three-fourths as long as the pronotum, furnished with a strong median carina which reaches nearly to the front edge of the latter; face strongly oblique, the frontal costa wide and provided with heavy lateral carinæ, rather broadly and deeply sulcate at the ocellus, punctate at the sides above. Pronotum with the disc gently tectate, of medium width, the lateral carinæ straight and gently converging in front; the disc of the hind lobe and the anterior edge of the front lobe provided with rather coarse, elongate, wavy ridges. Tegmina rather narrow, slightly surpassing the tip of the abdomen, not very profusely veined on the basal half and provided with a fairly well-defined intercalary vein. Hind femora long and slender, reaching the tip of the closed tegmina; and, owing to the head being longer than usual, apparently arising nearer the middle of the body than in other species of the genus. Hind tibiæ provided with 15 or 16 spines in the outer row.

Length of body, ♀, 34; of antennæ 8, of occiput 5, of pronotum 6·25, of tegmina 24, of hind femora 20 millim.

Hab. W. Mexico, Tepic in Jalisco (*coll. California Acad. of Sciences*).

A single female specimen.

[11. **Amblytropidia occidentalis,** Sauss.

Stenobothrus (*Rhammatocerus*) *occidentalis,* Sauss. Rev. et Mag. Zool. 1861, p. 317 [1]; Orthopt. Nova Amer. ii. p. 20 (1861) [2].

Stenobothrus occidentalis, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. pp. 755, 756 (1870) [3]; Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 92 (1873) [4]; Bruner, Rep. U.S. Ent. Comm. iii. p. 56 (1883) [5].

Amblytropidia occidentalis, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 226, 227, t. 3. figg. 13, 13 *a, b* (1897) [6]; Scudd. Cat. Orthopt. U.S. pp. 22, 23 (1900) [7].

Amblytropidia subhyalina, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 511 (1875) [8]; Ent. Notes, iv. p. 85 (1875) [9]; Bruner, Rep. U.S. Ent. Comm. iii. p. 58 [10].

Chloëaltis (*Amblytropidia*) *subhyalina,* Prov. Faun. Ent. Can. ii. p. 44 (1877) [11].

Hab. North America [1–11], South-eastern United States.

The only records of this insect which we have are from localities to the north and east of the Mexican boundary, although Saussure says (*in litt.*) that *A. mysteca*= *A. occidentalis.* It has several times been reported from Texas, but most frequently from the south-eastern portions of the United States.]

THYRIPTILON, gen. nov.

A genus including moderate or medium-sized insects, with rather long subensiform antennæ and obliquely truncate tegmina; and with a compressed pronotum, the lateral carinæ of which are nearly parallel on the anterior but strongly divergent on the posterior lobe.

Head of the same width as the front edge of the pronotum, rather high, the occiput somewhat ascending even to the extreme fastigium, the sides of the vertex straight, high, and meeting in front at much less than a right angle, even in the female, sulcation quite deep and without median longitudinal carina, lateral

foveolæ subobsolete. Eyes prominent, bulging, not much pointed above, and considerably shorter than that portion of the cheeks below them. Antennæ with the basal joints flattened and subensiform, about as long as (♀), or considerably longer than (♂), the combined length of the head and pronotum. Face very oblique, long and straight when viewed from the side. Pronotum short, somewhat compressed, the sides higher than long, the lower edges on the anterior half obliquely truncate; lateral carinæ parallel or nearly so on the anterior lobe, greatly divergent on the posterior; last transverse sulcus profound and situated distinctly behind the middle; anterior margin of the disc somewhat rounded, the posterior broadly angulate. Tegmina and wings complete, extending a little beyond the tip of the abdomen, even in the female; the former with the apex obliquely truncate, the costal or scapular edge somewhat dilated in both sexes, and without any traces of an intercalary vein. Wings provided on the costal area with a series of large, quadrate, window-like cells, that shine like highly polished glass, hence the name "*Thyriptilon.*" Hind femora heavy on the basal half, slender apically, as long as (♀) or longer (♂) than the abdomen. Hind tibiæ provided with 11–13 spines in the outer row.

1. **Thyriptilon vitripenne,** sp. n.

Uniformly dull brown, with indications of a darker streak along the upper edges of the sides of the pronotum, and sometimes with the tegmina evenly and rather profusely flecked with darker brown dots. Wings highly polished, very slightly tinged with yellow and becoming faintly clouded at the apex; the anterior border, especially in advance of the series of large quadrate cells, thickened and dark-coloured—possibly a stridulating device. Hind femora with the lower portion of the inner face on the basal half and lower outer edge black.

Length of body, ♂ 17–18, ♀ 28–30; of antennæ, ♂ 9, ♀ 8; of pronotum, ♂ 3·7, ♀ 4·85–5·15; of tegmina, ♂ 18, ♀ 23–24; of hind femora, ♂ 12, ♀ 16 millim.

Hab. Mexico, Valladolid in Yucatan (*Gaumer*).

Fourteen males and six females.

SISANTUM, gen. nov.

Having the general appearance of both *Orphulella* and *Thyriptilon*, but differing considerably from each in a number of details.

Occiput ascending, eyes a trifle prominent, broadly oval, about as long as the portion of the cheeks below them, the vertex gently depressed in front, sides of the fastigium straight, meeting in a right angle (♀) or less (♂), and followed internally by a rather deep groove; lateral foveolæ discernible as elongate depressions, slightly broadest next to the eyes; frontal costa percurrent. Antennæ filiform, rather longer than the head and pronotum combined. Pronotum gently expanding posteriorly, the lateral carinæ less prominent than the median but of equal prominence throughout, more or less divergent, especially on the metazona; prozona and metazona of about equal length, the lateral lobes deeper than long. Tegmina usually broadly rounded at the apex, but sometimes showing some indication of being obliquely truncate above; rather broad, and membranous to a greater extent than usual on the apical half or two-thirds. Wings hyaline, with their anterior edge re-enforced and provided with the usual large regular cells just behind the costa. Hind femora heavy basally, slender apically; the tibiæ provided with 13 spines in the outer row.

1. **Sisantum notochloris,** sp. n. (Tab. I. figg. 11, 11 *a*, ♀.)

This insect, which is the type of the genus, is characterized by having the top of the head, the disc of the pronotum, and the dorsal field of the tegmina uniformly grass-green. At first glance, save for its somewhat smaller size and filiform antennæ, it might be mistaken for the male of *Truxalis brevicornis* (Linn.).

Head about as wide as (♂), or a little wider than (♀), the front edge of the pronotum; vertex between the eyes about two-thirds (♂) or three-fourths (♀) as broad as their shortest diameter, projecting anteriorly for a distance about equal to or slightly less than its width posteriorly. Frontal costa rather broad,

prominent and sulcate throughout, the sides diverging from a point a little below the ocellus to the clypeus. Face when viewed from the side moderately oblique, straight. Pronotum with the lateral carinæ nearly parallel on the front, and considerably diverging on the hind, lobe, the last transverse sulcus profound, situated about the middle, cutting all three carinæ; front edge straight, the hind edge broadly angulate. Tegmina and wings extending beyond the tip of both the abdomen and hind femora in the two sexes; upper portion of the discal field of the tegmina provided with regular transverse veins which form rather large cells; the area just beneath irregularly veined, but in some specimens showing a tendency towards the formation of an obscure intercalary vein.

Green above, but with the sides of the head, the pronotum, a portion of the pleura, and the tegmina, except the dorsal area, brown or brownish, the latter with indications of scattered dots of a still darker shade. Lateral carinæ of the pronotum on the anterior lobe bordered with a line of black, which crosses over to the dorsal area on the hind lobe, thus maintaining the uniform width of the dorsal green stripe. Hind femora greenish-testaceous, becoming slightly darker apically; tibiæ brownish testaceous. Lower side pale yellowish.

Length of body, ♂ 18, ♀ 26; of antennæ, ♂ 10, ♀ 9; of pronotum, ♂ 3·5, ♀ 5; of tegmina, ♂ 17, ♀ 21·5; of hind femora, ♂ 12, ♀ 16 millim.

Hab. MEXICO, Medellin in Vera Cruz (*Rev. T. Heyde*).

Five males and two females, captured in the month of September.

CORDILLACRIS, Rehn *.

Stenobothrus, Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 80 (1873) (part.).
Oxycoryphus, Thomas, Proc. Dav. Acad. Nat. Sci. i. p. 251 (1876).
? *Ochrilidia*, Bruner, Proc. U.S. Nat. Mus. xii. p. 52 (1890).
Alpha, Brunner, Rev. Syst. Orthopt. p. 121 (1893); McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 245, 246 (1897); Scudder, Proc. Dav. Acad. Nat. Sci. viii. p. 23 (1900); Scudd. & Ckll. op. cit. ix. p. 26 (1902).
Cordillacris, Rehn, Canad. Ent. xxxiii. p. 271 (1901).

This is another Truxaline genus characteristic of the arid and semiarid regions of the Rocky Mountains and southward. While the collections before me lack representatives of this group, it is known that at least one, and possibly the two other described species occur in Mexican territory.

Table for separating the Species of Cordillacris.

A¹. Larger. Median carina of the pronotum cut much behind the middle. Disc of the tegmina provided with rather small dark spots.
  *b*¹. Posterior tibiæ in part red or reddish . . . . . 1. *occipitalis*, Thom.
  *b*². Posterior tibiæ testaceous . . . . . [2. *cinerea*, Bruner.]
A². Smaller. Median carina of the pronotum cut very little behind the middle. Disc of the tegmina provided with large dark blotches which run together . . . . . [3. *crenulata*, Bruner.]

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* The name *Cordillacris*, Rehn, should take the place of *Alpha*, Brunner, which is preoccupied in Hymenoptera (see *anteà*, p. 29).

1. **Cordillacris occipitalis,** Thomas.

Stenobothrus occipitalis, Thomas, Syn. Acrid. N. Amer. p. 81 (1873) [1]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 17. fig. 13 (1874) [2]; Bruner, Rep. U.S. Ent. Comm. iii. p. 55 (1883) [3].

Oxycoryphus occipitalis, Thomas, Proc. Dav. Acad. Nat. Sci. i. p. 251 (1876) [4]; Ann. Rep. Chief Eng. 1878, p. 1843 (1878) [5].

Ochrilidia occipitalis, Bruner, Proc. U.S. Nat. Mus. xii. p. 52 (1889) [6]; Townsend, Insect Life, vi. p. 31 (1893) [7].

Alpha occipitalis, Brunner, Rev. Syst. Orthopt. p. 121 (1893) [8]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 246, 247, t. 4. figg. 18, 18 *a, b* (1897) [9]; Scudd. Cat. Orthopt. U.S. p. 23 (1900) [10].

Cordillacris occipitalis, Rehn, Proc. Acad. Nat. Sci. Phil. 1902, p. 718 [11]; Caudell, Proc. U.S. Nat. Mus. xxvi. p. 782 (1903) [12].

Hab. North America [1–12], Plains east of the Rocky Mountains and the basin between the latter and the Sierra Nevada, southward to beyond the limits of the United States.—Mexico, Chihuahua (*Bruner*).

[2. **Cordillacris cinerea,** Bruner.

Ochrilidia cinerea, Bruner, Proc. U.S. Nat. Mus. xii. pp. 52, 53 (1890) [1].

Alpha cinerea, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 247 (1897) [2]; Scudd. Cat. Orthopt. U.S. p. 23 (1900) [3]; Scudd. & Ckll. Proc. Dav. Acad. Nat. Sci. ix. p. 26 (1902) [4].

Cordillacris cinerea, Caudell, Proc. U.S. Nat. Mus. xxvi. p. 782 (1903) [5].

Hab. North America [1–5], Western Nebraska southward to near Mesilla, New Mexico.

Found on sandy ground and more restricted in its distribution than the preceding.]

[3. **Cordillacris crenulata,** Bruner.

Ochrilidia crenulata, Bruner, Proc. U.S. Nat. Mus. xii. pp. 51, 52 (1890) [1]; Publ. Nebr. Acad. Sci. iii. p. 22 (1893) [2].

Alpha crenulata, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 247 (1897) [3]; Scudd. Cat. Orthopt. U.S. p. 23 (1900) [4]; Scudd. & Ckll. Proc. Dav. Acad. Nat. Sci. ix. p. 26 (1902) [5].

Cordillacris crenulata, Caudell, Proc. U.S. Nat. Mus. ix. p. 26 (1903) [6].

Hab. North America [1–6], southern portion of New Mexico and Arizona.

Of nearly the same habits as *C. occipitalis* but rather less common and somewhat restricted to gravelly hill-sides and tracts covered with scattered short grass.]

PHLIBOSTROMA, Scudder.

Stenobothrus, Thomas, Syn. N. Amer. Acrid. p. 93 (1873) (part.) (nec Fischer).

Phlibostroma, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 517 (1875); Ann. Rep. Chief Eng. 1876, p. 510 (1876); Bruner, Rep. U.S. Ent. Comm. iii. p. 57 (1883); McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 247, 248 (1897).

Beta, Brunner, Rev. Syst. Orthopt. p. 121 (1893).

This genus is represented by a single variable species. It is a characteristic locust of the arid and semiarid regions of western North America, from the plains of the Saskatchewan to an indeterminate point on the interior tablelands of Mexico. The following brief synonymy will give the reader some notion of its variability.

1. **Phlibostroma quadrimaculatum,** Thomas.

Stenobothrus quadrimaculatus, Thomas, Prelim. Rep. U.S. Geol. Surv. Wyom. p. 280 (1871) [1]; Syn. N. Amer. Acrid. p. 93 (1873) [2]; Bruner, Rep. U.S. Ent. Comm. iii. p. 56 (1883) [3].

Phlibostroma quadrimaculatum, Bruner, Bull. Washb. Lab. Nat. Hist. i. no. 4, p. 135 (1885) [4]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 248, 249, t. 4. figg. 19, 19 *a*, *b* (1897) [5]; Scudd. Cat. Orthopt. U.S. p. 23 (1900) [6].

Phlibostroma pictum, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 517 (1875) [7]; Bruner, Rep. U.S. Ent. Comm. iii. p. 57 [8]; Publ. Nebr. Acad. Sci. iii. p. 23 (1893) [9].

Phlibostroma parvum, Scudd. Ann. Rep. Chief Eng. 1876, p. 510 (1876) [10]; Bruner, Rep. U.S. Ent. Comm. iii. p. 57 [11]; Bull. Washb. Lab. Nat. Hist. i. pp. 198, 199 (1886) [12].

Stenobothrus lætus, Uhler, Bull. U.S. Geol. Surv. Terr. iii. pp. 792, 793 (1877) [13].

Phlibostroma lætum, Bruner, Bull. Washb. Lab. Nat. Hist. i. p. 199 [14].

Hab. North America [1–14], Plains of the Saskatchewan to the interior tablelands of Mexico.—Mexico, Northern Chihuahua (*Bruner*).

Not represented in any of the Mexican collections before me, but observed by me while collecting other insects in the mountains of Northern Chihuahua during the autumn of 1887.

ORPHULA, Stål *.

Gomphocerus (*Hyalopteryx*), Stål, Kongl. Svenska Freg. Eug. Resa, Ins., Orthopt. p. 339 (1860) (part.).

Truxalis (*Orphula*), Stål, Recens. Orthopt. i. p. 105 (1873) (part.).

Orphula, Stål, Obs. Orthopt. ii. p. 42 (1876).

A genus composed of medium-sized insects belonging to Tropical America, and possibly represented by several species. The type of *Orphula*, *O. pagana*, Stål, is found in Southern Brazil, Paraguay, and Northern Argentina. Two other species are now added. They may be separated as follows:—

A[1]. Fastigium of the vertex with its antero-lateral edges decidedly rounded. Basal joints of the antennæ greatly depressed. Lateral carinæ of the pronotum only gently divergent on the hind lobe . . . . . [1. *pagana*, Stål.]

A[2]. Fastigium of the vertex with its antero-lateral edges nearly straight. Basal joints of the antennæ only gently depressed. Lateral carinæ of the pronotum strongly divergent on the hind lobe.

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* Since the publication of the Synopsis of the Genera of Tryxalinæ (*anteà*, pp. 26–34), two insects have come into my possession which seem to belong to this genus.

*b*¹. Lateral carinæ of the anterior lobe of the pronotum parallel. [Costa Rica.] . . . . . 2. *meridionalis*, sp. n.

*b*². Lateral carinæ of the anterior lobe of the pronotum plainly divergent in front. [Mexico.] . . . . . 3. *azteca*, Sauss.

[1. **Orphula pagana**, Stål.

Gomphocerus (*Hyalopteryx*) *paganus*, Stål, Freg. Eug. Resa, Ins., Orthopt. p. 339 (1860) [1].

Truxalis (*Orphula*) *pagana*, Stål, Recens. Orthopt. i. p. 106 (1873) [2].

Hab. South America [1 2], Rio Janeiro, Brazil, Paraguay, &c.]

2. **Orphula meridionalis**, sp. n.

About the same size as, but somewhat more robust than, *O. pagana*, Stål. General colour dark brown, relieved by green on the dorsum of the prothorax and on the tegmina above.

Face oblique, nearly straight when viewed from the side; vertex between the eyes a little narrower than the shortest diameter of one of them, the fastigium provided with a raised rim and projecting forwards about as far as its posterior width, the sides nearly straight and its apex acute, in this respect recalling to mind the various species of the genus *Orphulella*. Antennæ about as long as the head and pronotum together, the basal joints flattened and moderately broad, but, owing to the slight enlargement of the apical joints, these members can scarcely be said to be ensiform. Pronotum with the dorsum flat, widening but gently posteriorly, the sides nearly perpendicular, front edge straight, the hind margin broadly angulate, but with the apex gently and rather widely emarginate; lateral carinæ nearly as prominent as the median, parallel to the last transverse sulcus, which is situated slightly behind the middle, and from this point gently diverging till they reach the posterior edge. Surface of the sides of the pronotum and the pleura of meso- and metathorax quite coarsely wrinkled and grooved or covered with irregular raised lines. Tegmina moderately broad, a little longer than the abdomen, with the dorsal portion flattened and separated from the discal field by a decided angle, their apex obliquely truncate. Hind femora extending a trifle beyond the tip of the abdomen, only gently enlarged at the base, and with the lateral apical lobes pointed. Hind tibiæ with 11 spines in the outer row. Interspace between the mesosternal lobes broader than long, the sides rounded.

The upper edge of the lateral lobes of the pronotum provided with a narrow streak of black, which in part crosses to the dorsal surface at the transverse sulcus. There is also a row of irregular black dots along the dorsal portion of each elytron just inside the angle, and a few similar dots on the discal field, although the latter are scarcely visible on account of the dark brown colour of this portion. It is possible that in life this insect has a pale-coloured abdomen, especially below, and that the legs are also somewhat lighter than the head and thorax. There are indications of a greenish tinge on the anterior portion of the sides of both the meso- and metathorax, and it is therefore likely that the species will be found to vary considerably in its general colour, as do many of its allies. Wings tinged with ferruginous as in *O. pagana*.

Length of body, ♀, 24; of pronotum 4·5, of tegmina 19·5, of hind femora 15 millim.

Hab. Costa Rica, Pozo Azul (*M. A. Carriker, Jr., in coll. Bruner*).

A single female, found in May or June 1902.

3. **Orphula azteca**, Sauss. (Tab. I. fig. 23, ♂.)

Oxycoryphus aztecus, Sauss. Rev. et Mag. Zool. xiii. p. 315 (1861) [1].

Hab. Mexico [1], Orizaba and Cordova (*Mus. Geneva*: ♂ ♀), San Lorenzo, near Cordova (*M. Trujillo*: ♂), Jalapa (*coll. Bruner*).

As I write, Saussure's type, a male, is before me; while among the other material which has been submitted to me for study by that gentleman there are three other specimens of the same species. One of these latter, a female, bears the label "*Orphula zapoteca*, Sauss. (inedit.)"; another, a male, also bears a similar label; and the third is ticketed "*Orphula pagana*." There is scarcely any doubt that they all belong to the same species. The female is brownish testaceous, and has the tegmina rather coarsely sprinkled with dull fuscous spots, and lacks the green dorsal band on the disc of the pronotum and along the hind edges of tegmina, so characteristic of the male.

ORPHULINA, Giglio-Tos.

Orphulina, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Univ. Torino, ix. no. 184, p. 9 (1894).

1. **Orphulina pulchella**, Giglio-Tos.

Orphulina pulchella, Giglio-Tos, loc. cit.[1].

Hab. Panama, Darien (*Dr. Festa*[1]).—Colombia, Cartagena[1]; Paraguay, San Pedro[1].

This insect was described from specimens from San Pedro, Paraguay, said to occur also on the Isthmus of Darien and at Cartagena, Colombia, where individuals of both sexes were taken by Dr. E. Festa. It has not been recognized by me, unless *Orphulella aculeata*, Rehn, is the same species (see Trans. Amer. Ent. Soc. xxvii. pp. 92, 93 *et seq.*).

ORPHULELLA, Giglio-Tos.

Orphula, Stål, Recens. Orthopt. i. p. 105 (1873) (part.).
Stenobothrus, Scudder, Thomas, and others (nec Fischer) (part.).
Orphulella, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Tor. ix. no. 184, p. 10 (Sept. 1894); Morse, Psyche, vii. p. 407 (1896); Scudder, Canad. Ent. xxxi. pp. 177–188 (1899).
Orphula, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 233 (1897) (nec Stål).

This genus is by far the most extensive in the subfamily Tryxalinæ, being represented by a large number of species of rather small locusts that are to be met with as common forms at most localities where they are found. Its representatives occur in America between the latitudes of at least 45° north and south of the Equator. Twenty-five are herewith assigned to Mexican and Central-American regions, while several others may be found there hereafter. Although very similar in general appearance, a close comparison of these insects shows that the different species can be distinguished without much difficulty.

Table for separating the Species of Orphulella.

A[1]. Discoidal area of the basal half of the tegmina of the ♀ generally plainly narrowed distally, where it is nearly always occupied by a single row of cells and is distinctly narrower than the ulnar area at

its widest part; ulnar area of the ♂ occupied by a single row of cells, rarely partially divided into two sets by an irregular spurious vein.

b^1. Lateral carinæ of the pronotum nearly straight, parallel, slightly divergent posteriorly, or very faintly arcuate on the prozona.

c^1. Antennæ of the ♂ not longer than the head and pronotum together, basally depressed and apically subacuminate . . . [1. *compta*, Scudd.]

c^2. Antennæ of the ♂ a little longer than the head and pronotum together, of equal size throughout and nowhere flattened . . [24. *decora*, McNeill.]

b^2. Lateral carinæ of the pronotum distinctly bent, often greatly divergent both in front and behind. Anterior ulnar vein of the ♂ tegmina distally much nearer the radial than the lower ulnar vein.

c^1. Narrowest (middle) portion of the pronotal disc more than three-fourths the width of the broadest (posterior) portion . . . . [9. *obliquata*, Scudd.]

c^2. Narrowest (middle) portion of the pronotal disc not more, generally less, than three-fourths the width of the broadest (posterior) portion.

d^1. More or less variegated, the tegmina usually with a median series of spots. Antennæ of the ♂ not longer than the head and pronotum together; hind margin of the pronotum obtusely angulate.

e^1. Fastigium of the vertex less sharply angulate and less prominent, in the ♂ advanced beyond the eyes by not more than one-third the length of the eyes as seen from above, in the ♀ generally roundly obtusangulate . . . [8. *picturata*, Scudd.]

e^2. Fastigium of the vertex more sharply angulate and more prominent, in the ♂ advanced beyond the eyes by half or nearly half the length of the eyes as seen from above, in the ♀ generally distinctly rectangulate.

f^1. Normally brown or testaceous, seldom with much green. 5. *affinis*, Scudd.

f^2. Normally grass-green, never brown, seldom testaceous . [2. *graminea*, sp. n.]

d^2. Rarely variegated, the tegmina usually immaculate; antennæ of the ♂ longer than the head and pronotum together; hind margin of the pronotum rounded, scarcely angulate . . . [7. *speciosa*, Scudd.]

A^2. Discoidal area of the basal half of the tegmina of the ♀ scarcely narrowed distally, and here nearly always occupied by more than one row of cells, and little, if any, narrower than the ulnar area at its widest part; ulnar area of the ♂ either divided into two series of cells by a more or less distinct spurious vein, or irregularly reticulate, never occupied throughout by a single series of cells.

b^1. Lateral carinæ of the pronotum distinctly arcuate, the disc of unequal width, being narrower (often considerably narrower) in the middle than behind, and generally than in front.

c^1. Antennæ of the ♂ considerably longer than the head and pronotum together.

d^1. Larger. Disc of the pronotum greatly clepsydral, the lateral carinæ diverging noticeably both in front and behind; tegmina of the ♂ generally much surpassing the hind femora . . . . . [10. *pratorum*, Scudd.]

d^2. Smaller. Disc of the pronotum only slightly clepsydral, the lateral carinæ nearly parallel on the anterior lobe and divergent behind; tegmina only a little surpassing the hind femora . . . . . 11. *neglecta*, Rehn.

c^2. Antennæ of the ♂ not or scarcely longer than the head and pronotum together.

d^1. More slender. Tegmina and wings, even of the ♀, reaching considerably beyond the tips of the hind femora.

e^1. General colour green or olive. Fastigium of the vertex acutangulate, as long as wide.

f^1. Wings infuscated. General colour grass-green; tegmina without the row of discal dark spots . . . . . 12. *aculeata*, Rehn.

f^2. Wings not infuscate. General colour olive-green; the tegmina provided with a row of faint discal spots . . 3. *olivacea*, Morse.

e^2. General colour brown or testaceous. Fastigium of the vertex obtuse-angulate, or, at most, rectangulate in front, shorter than broad.

f^1. Antennæ very slender, as long as the head and pronotum together, even in the ♀. Lateral carinæ of the pronotum distinctly, and often considerably, divergent both in front and behind . . . . . [6. *pelidna*, Burm.]

f^2. Antennæ more robust, the basal joints depressed, the apex gently acuminate, in the ♀ shorter than the head and pronotum together.

g^1. Lateral carinæ of the pronotum only gently bowed. Colour uniformly green or testaceous, without dusky mottlings . . . . . 4. *arctata*, Walk.

g^2. Lateral carinæ of the pronotum more decidedly arcuate. Entire insect usually profusely variegated with dark mottlings, the tegmina very often evenly marked with dark flecks . . . . . 13. *punctata*, De G.

d^2. More robust. Tegmina and wings, even in the ♂, but little surpassing the tip of the hind femora.

e^1. Body greatly compressed and deeper than usual. Lateral carinæ of the pronotum comparatively near together and nearly parallel on the front lobe, strongly divergent on the hind lobe . . . . . 14. *mexicana*, Sauss.

e^2. Body less compressed and not unusually deep. Lateral

carinæ of the pronotum farther apart and distinctly arcuate on the anterior lobe, less strongly divergent behind.

f^1. Larger. (♀: length 20–22 mm.) Variable in colour, but very often largely green. [Central America.] . . 21. *costaricensis*, sp. n.

f^2. Smaller. (♀: length 16–18 mm.) Usually green, more or less varied with testaceous, purplish or brown, and black.

g^1. Pronotum short, the lateral carinæ gently arcuate, the median carina cut a little back of the middle. [Cordova, Mexico.] . . . . . 19. *zapoteca*, Sauss.

g^2. Pronotum with the lateral carinæ more decidedly arcuate; the median carina cut at the middle.

h^1. Lateral foveolæ of the vertex elongate-triangular, moderately deeply impressed. Disc of the pronotum narrowest at the first transverse sulcus. [Mexico.] . . . . . 17. *tepaneca*, Sauss.

h^2. Lateral foveolæ of the vertex linear, rather faint. Disc of the pronotum narrowest at the second transverse sulcus. [Central America.] . . . . 20. *meridionalis*, sp. n.

b^2. Lateral carinæ of the pronotum not arcuate, either straight throughout or parallel on the anterior lobe and more or less divergent on the posterior one.

c^1. Antennæ of the ♂ decidedly longer than the head and pronotum together, and more than ordinarily heavy.

d^1. Lateral carinæ of the pronotum gently and evenly divergent posteriorly. Eyes prominent, elongate. Face strongly oblique . . . . . 23. *prominula*, sp. n.

d^2. Lateral carinæ of the pronotum divergent on the posterior lobe only. Eyes less prominent, subglobular. Face only moderately oblique . . . . . 25. *robusta*, sp. n.

c^2. Antennæ of the ♂ shorter, seldom even equalling the combined length of the head and pronotum, not incrassate.

d^1. Larger. (♀: length 25 mm.) Antennæ filiform, those of the ♀ longer than the pronotum. [Cuba and Island of Pines.] . . . . . [22. *scudderi*, Bol.]

d^2. Smaller. (♀: length 20–21 mm.) Antennæ very short, in the ♀ not longer than the pronotum. [Mexico.]

e^1. Fastigium of the vertex prominent and decidedly angulate, as long as broad.

f^1. Distal portion of the discoidal area of the tegmina of the ♀ finely and irregularly veined; antennæ subensiform . 15. *tolteca*, Sauss.

f^2. Distal portion of the discoidal area of the tegmina of the ♀ more regularly veined; antennæ with basal joints a little depressed. [Orizaba.] . . . . . 18. *orizabæ*, McNeill.

e^2. Fastigium of the vertex less prominent, broadly and roundly angulate, only about one-half as long as wide; basal joints of antennæ scarcely depressed. [Interior tablelands of Mexico.] . . . . . 16. *viridescens,* Scudd.

Note.—Owing to the unsatisfactory descriptions of *Oxycoryphus totonacus*, Saussure, and *Stenobothrus decisus*, *S. viridissimus*, and *S. mexicanus*, Walker, all of which seem to belong to *Orphulella*, these forms have been omitted from the foregoing table. Possibly *S. mexicanus* is the same as *Acridium punctatum*, De Geer. If distinct, it will necessitate its being renamed, and the name of *Orphulella walkeri* is suggested. *S. decisus* is found in Santo Domingo, and no doubt is a good species; while *S. viridissimus* seems to be nearly related to, or the same as, *O. meridionalis*, which is described below.

[1. **Orphulella compta,** Scudd.

Orphulella compta, Scudd. Canad. Ent. xxxi. pp. 178, 180, 181 (1899) [1]; Proc. Dav. Acad. Nat. Sci. viii. p. 23 (1900) [2].

Hab. North America, Yuma, Arizona, Palm Springs, California (*A. P. Morse, Scudder* [1 2]).]

[2. **Orphulella graminea,** sp. n.

Pale grass-green, with a faint dusky line on the head, back of the eyes, and along the upper edge of the sides of the pronotum, crossing over to the disc on the hind lobe, bordered above by a narrow line of dirty white, the latter following the lateral carinæ of the pronotum. The basal portion of the disc of the tegmina showing traces of a median longitudinal row of light and dark spots, beyond the middle transparent. Eyes ferruginous and sometimes likewise the antennæ. Anterior and middle legs, together with the hind femora and the body below, uniformly green, the latter much paler than the legs; the hind tibiæ dull grey, the outer edge provided with ten spines.

Head rather broader than the front edge of the pronotum, the occiput a little ascending and gently arched; the fastigium slightly acute (♂), or meeting at about a right angle in front (♀), in the ♂ advanced beyond the eyes by nearly or quite half the length of the eyes as seen from above, rather decidedly sulcate; lateral foveolæ elongate-triangular, not very plain. Antennæ with the joints scarcely depressed, acuminate, about reaching the last transverse sulcus of the pronotum in the ♀, or a little beyond in the ♂. Pronotum with its lateral carinæ nearly parallel on the anterior lobe, divergent on the posterior one, the two lobes almost equal in length, the front one a trifle the longer. Tegmina slightly surpassing the tips of the hind femora in both sexes; the latter rather long, extending a little beyond the apex of the abdomen, even in the ♀.

Length of body, ♂ 17, ♀ 24–26; of pronotum, ♂ 3·3, ♀ 4·25; of tegmina, ♂ 14, ♀ 19; of hind femora, ♂ 11, ♀ 14 millim.

Hab. North America, Phœnix, Arizona (*R. E. Kunze, in coll. L. Bruner*).

Numerous specimens.]

3. **Orphulella olivacea,** Morse.

Stenobothrus olivaceus, Morse, Psyche, vi. pp. 477, 478, figg. 1, 2 (1893) [1].

Orphula olivacea, Morse, Psyche, vii. pp. 327, 411, t. 7. figg. 10, 10 *a* (1896) [2]; Giglio-Tos, Boll. Mus. Zool. Tor. xii. no. 301, p. 2 (1897) [3].

Orphulella olivacea, Scudd. Canad. Ent. xxxi. pp. 179, 187 (1899) [4].

Hab. North America, Atlantic States [1 2 4].—Panama, Isthmus of Darien (*Dr. Festa* [3]).

The recognition of this species by Giglio-Tos, among some Orthoptera collected on the Isthmus of Darien and in Colombia, may be an error, as none of the collections examined by me seem to bear out his conclusions.

4. **Orphulella arctata,** Walker.

Stenobothrus arctatus, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 761 (1870) [1]; Thomas, Syn. Acrid. N. Amer. p. 208 (1873) [2].

Hab. Honduras [1] [♂], Ruatan I. (*Gaumer*: ♂ ♀).

The 'Biologia' collection contains several specimens from Ruatan Island that are referred to this species.

[5. **Orphulella affinis,** Scudd.

Orphulella affinis, Scudd. Canad. Ent. xxxi. pp. 178, 183 (1899) [1].

Hab. North America, California, San Diego, Coronado, Kern City, Colorado Desert (*A. P. Morse, and coll. Stanford Univ.* [1]).]

[6. **Orphulella pelidna,** Burm.

Gomphocerus pelidnus, Burm. Handb. d. Ent. ii. p. 650 (1838) [1].
Stenobothrus pelidnus, Thomas, Rep. U.S. Geol. Surv. v. p. 95 (1873) [2].
Orphula pelidna, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 235, 239 (1897) [3].
Orphulella pelidna, Scudd. Canad. Ent. xxxi. pp. 179, 187 (1899) [4].
Stenobothrus maculipennis, Scudd. Bost. Journ. Nat. Hist. vii. pp. 458–459 (1862) [5].
Stenobothrus propinquans, Scudd. loc. cit. p. 461 (1862) [6].

Hab. North America [1–6], generally, eastward, California, New Mexico (*Morse*).—Antilles, Cuba (*Wright*).]

[7. **Orphulella speciosa,** Scudd.

Stenobothrus speciosus, Scudd. Bost. Journ. Nat. Hist. vii. p. 485 (1862) [1].
Orphula speciosa, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 240, 242, t. 4. fig. 17 *c* (1897) [2].
Stenobothrus æqualis, Scudd. Bost. Journ. Nat. Hist. vii. pp. 459–460 (1862) [3].
Stenobothrus bilineatus, Scudd. loc. cit. pp. 460–461 (1862) [4].
Stenobothrus gracilis, Scudd. Rep. U.S. Geol. Surv. Nebr. p. 250 (1871) [5].

Hab. North America, Nova Scotia to, and including, Texas [1–5].]

[8. **Orphulella picturata,** Scudd.

Orphulella picturata, Scudd. Canad. Ent. xxxi. pp. 178, 182 (1899) [1].

Hab. North America, Texas [1].]

[9. **Orphulella obliquata,** Scudd.

Orphulella obliquata, Scudd. Canad. Ent. xxxi. pp. 178, 181–182 (1899) [1].

Hab. North America, Texas to Colorado [1].]

[10. **Orphulella pratorum,** Scudd.

Orphulella pratorum, Scudd. Canad. Ent. xxxi. pp. 179, 186 (1899) [1].

Hab. North America, Southern United States, Gulf coast of Texas [1].]

11. **Orphulella neglecta,** Rehn.

Orphulella neglecta, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 94 (1900) [1].

Hab. Mexico, Orizaba, Vera Cruz (*coll. Rehn, Bruner* [1]).

12. **Orphulella aculeata,** Rehn.

Orphulella aculeata, Rehn, Trans. Amer. Ent. Soc. xxvii. pp. 92–94 (1900) [1].

Hab. Mexico, Cuernavaca in Morelos (*Barrett*: ♂ ♀), Chilpancingo in Guerrero (*H. H. Smith*: ♂ ♀).

Found in June, July, and August.

13. **Orphulella punctata,** De Geer.

Acrydium punctatum, De G. Mém. Hist. Ins. iii. p. 503, t. 42. fig. 12 (1773) [1].

Orphula punctata, Stål, Recens. Orthopt. i. pp. 106–107 (1873) [2]; Brunner & Redt. Proc. Zool. Soc. Lond. 1892, p. 208 [3].

Orphula (*Orphulella*) *punctata,* Giglio-Tos, Boll. Mus. Zool. Torino, ix. no. 184, p. 12 (1894) [4].

Hab. Mexico, Yucatan (*Gaumer*), Vera Cruz, Guerrero, &c.; Costa Rica (*Bruner*). —South America, Colombia, Surinam, Brazil, Paraguay, Argentina, Trinidad.

The insect described by De Geer, if rightly determined by me, is one of the most variable in colour, and, at the same time, widely distributed species of the genus in tropical America. I possess a female specimen from Trinidad that appears to be typical. If this be correct, then the various other examples before me from Central America, including both sexes, belong here also.

14. **Orphulella mexicana,** Sauss.

Oxycoryphus mexicanus, Sauss. Rev. et Mag. Zool. xiii. p. 314 (1861) [1]; Thomas, Syn. Acrid. N. Amer. p. 202 (1873) [2].

Hab. Mexico [1], Jalapa (*O. W. Barrett*).

Three specimens, Saussure's types, male and female, and a second female, are before me as I write. The species must either be a rare insect or else it is restricted to certain conditions of surroundings which have tended so far to keep it out of the hands of collectors.

15. **Orphulella tolteca,** Sauss.

Oxycoryphus toltecus, Sauss. Rev. et Mag. Zool. xiii. p. 314 (1861) [1]; Thomas, Syn. Acrid. N. Amer. p. 201 (1873) [2].

Hab. Mexico [1].

16. **Orphulella viridescens,** Scudd.

Orphulella viridescens, Scudd. Canad. Ent. xxxi. pp. 179, 187–188 (1899) [1].

Hab. Mexico, Alvarez Mountains (*Dr. Palmer* [1]), Tlalpam and Mexico City (*L. Bruner*).

This insect appears to be quite common in November on closely grazed pastures in the vicinity of Mexico City.

17. **Orphulella tepaneca,** Sauss.

Stenobothrus (*Rhammatocerus*) *tepanecus,* Sauss. Rev. et Mag. Zool. xiii. p. 319 (1861) [1]; Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 756 (1870) [2]; Thomas, Syn. Acrid. N. Amer. p. 206 (1873) [3].

? *Orphula tepaneca,* McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 242–243, t. 4. fig. 17 *a* (1897) [4].

Hab. Mexico [1 2], Orizaba (*H. H. Smith & Godman*).

Saussure's type, a female, is before me as I write.

18. **Orphulella orizabæ,** McNeill.

Orphula orizabæ, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 243, t. 4. fig. 17 (1897) [1].

Orphulella orizabæ, Scudd. Canad. Ent. xxxi. p. 179 (1899) [2].

Hab. North America, San Antonio, Texas [1].—Mexico, Mexico City and Tlalpam [1].

This species has not been recognized among the material at hand.

19. **Orphulella zapoteca,** Sauss.

Oxycoryphus zapotecus, Sauss. Rev. et Mag. Zool. xiii. p. 316 (1861) [1]; Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 787 (1870) [2]; Thomas, Syn. Acrid. N. Amer. p. 203 (1873) [3].

Hab. Mexico, Cordova [1].

20. **Orphulella meridionalis,** sp. n.

Very similar to *O. costaricensis* in general appearance and build, but considerably smaller, and separable from the other members of the genus by the characters mentioned in the synoptical table (*supra*, p. 77). The tegmina of the present species, it may be added, are more membranous than in *O. costaricensis*, and are less apt to be furnished with the row of discal dark spots. The prevailing colour seems to be largely green, as no dark specimens are at hand.

Length of body, ♂ 13, ♀ 18; of pronotum, ♂ 2·60, ♀ 3·5; of tegmina, ♂ 11, ♀ 13·5; of hind femora, ♂ 8, ♀ 10 millim.

Hab. Costa Rica (*Biolley, in coll. Bruner*).

21. **Orphulella costaricensis,** sp. n.

A rather robust insect of variable colour, with the antennæ of the ♂ scarcely so long as the head and pronotum together, and the tegmina and wings (even in the ♂) extending only a trifle beyond the tip of the hind femora.

Head a little wider than the front edge of the pronotum; the occiput rather short and not greatly rounded; fastigium somewhat deeply sulcate and projecting in advance of the eyes a little further than one-half its diameter, its sides meeting in a right angle (♂) or obtuse (♀) in front, the anterior portion of the sulcature provided with a well-marked median carina; frontal costa fairly prominent, evenly divergent and reaching the clypeus, scarcely sulcate, but provided with a few rather coarse punctures both above and below the ocellus; lateral foveolæ rather deeply impressed, elongate-triangular. Antennæ with the joints depressed, shorter than the combined length of the head and pronotum in both sexes, Pronotum with the sides gently compressed in the middle, the two lobes about equal in length; lateral carinæ arcuate, approaching most closely at the second transverse sulcus, the hind edge broadly angulate. Tegmina of moderate width, the costal edge near the base somewhat dilated; discal area scarcely narrowing distally, where it is occupied by two rows of cells, the ulnar area in the ♂ irregularly veined. Hind tibiæ with 9 spines in the outer row.

General colour variable, but often in great part green or testaceous, with the usual dusky bands reaching from the back edge of the eyes to the hind margin of the pronotum, crossing over to the disc on the hind lobe. Tegmina furnished with a longitudinal discal row of fuscous spots. In some of the darker-coloured (brownish) individuals the entire tegmina are more or less generally marked with fuscous spots, reminding one of *O. punctata*.

Length of body, ♂ 14–15, ♀ 20–21; of pronotum, ♂ 2·65, ♀ 3·95; of tegmina, ♂ 12, ♀ 16; of hind femora, ♂ 8·5, ♀ 12 millim.

Hab. Costa Rica, San José (*P. Biolley, M. Cary, L. Bruner*).

[22. **Orphulella scudderi,** Bolivar.

Orphula scudderi, Bol. Mém. Soc. Zool. Fr. i. p. 142 (1888)[1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 235, 244 (1897)[2].

Orphulella scudderi, Scudd. Canad. Ent. xxxi. pp. 179, 188 (1899)[3].

Hab. Antilles, Cuba, Isle of Pines[1–3].]

23. **Orphulella prominula,** sp. n.

Orphulella prominula, Scudder (MSS.).

A medium-sized insect, with the antennæ rather heavier than usual and somewhat longer than the combined length of the head and pronotum, and the lateral carinæ of the pronotum gently and evenly divergent posteriorly. Face strongly oblique; the eyes prominent and a little more elongate than usual.

Head rather long above, the fastigium about as long as wide, acute-angled, deeply sulcate and with a short median carina in front, the lateral walls profound and rather sharp, the lateral foveolæ faint, triangular. Frontal costa rather prominent, evenly divergent, sulcate throughout. Pronotum with the last transverse sulcus situated plainly behind the middle, the disc of the hind lobe above furnished on each side between the median and lateral carinæ with two longitudinal ridges or rugæ. Tegmina rather narrow, irregularly veined in the discal and ulnar areas, about reaching the tip of the hind femora. The latter about normal, provided with twelve or thirteen spines in the outer row.

General colour testaceous, with the upper third or fourth of the sides of the pronotum and the base of the tegmina infuscated—possibly, in some specimens the prevailing tint above is green or flavous. Wings hyaline, or very faintly clouded apically.

Length of body, ♂, 16–17; of pronotum 3, of tegmina 13·5, of hind femora 9·75 millim.

Hab. Mexico, Mazatlan (*coll. Scudder*), Presidio (*Forrer*).

Three specimens, all males.

[24. **Orphulella decora,** McNeill.

Orphula decora, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 235, 239–240, t. 4. fig. 17 *d* (1897) [1]; Canad. Ent. xxxi. p. 54 (1899) [2].

Orphulella decora, Scudd. Canad. Ent. xxxi. pp. 178, 181 (1899) [3].

Hab. North America [1–3], Colorado to Texas (*Scudder*).

Not recognized among the material before me.]

25. **Orphulella robusta,** sp. n.

Rather robust, with the tegmina and wings only slightly surpassing (♂) or not quite reaching (♀) the tip of the abdomen. Basal joints of the antennæ depressed, in the ♂ considerably longer than, and in the ♀ about as long as, the head and pronotum together. Head large, a little wider than the front edge of the pronotum above, evenly expanding below and gently sulcate throughout; fastigium of the vertex rather prominent, the sides in the ♂ meeting in front in an acute angle, in the ♀ in about a right angle, shallowly sulcate and provided in the middle anteriorly with a well-defined carina; lateral foveolæ obscure, triangular. Pronotum moderately long, the anterior lobe somewhat the longer, only the last transverse sulcus at all profound; lateral carinæ parallel on the anterior lobe, gently divergent on the posterior lobe, hind edge subangulate. Tegmina irregularly reticulate, their costal edge somewhat dilated near the base. Hind femora moderately robust, surpassing the abdomen in both sexes.

General colour above greenish or testaceous, varied with the usual dark line along the upper edge of the sides of the pronotum. Anterior edge and disc of tegmina brownish or fuscous, and in some specimens showing a central series of dusky dots, the dorsal edges green or greenish. Hind femora with their apices dusky; tibiæ brownish-purple.

Length of body, ♂ 16, ♀ 23; of pronotum, ♂ 3·35, ♀ 4·5; of tegmina, ♂ 10, ♀ 13; of hind femora, ♂ 10·5, ♀ 14 millim.

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*).

Two males and one female, captured in August.

[PARACHLOEBATA, gen. nov.

Not unlike *Orphulella* and *Amblytropidia*, but structurally quite different from either of them, though closest to the former, as will be seen by the characters given in the analytical table for the separation of the genera of this subfamily, as treated in the present work.

Body compressed, rather smooth. Head of medium size, about as wide as the front edge of the pronotum, the occiput nearly straight and about on the same plane with the disc of the pronotum; eyes not prominent, pointed above, straight in front, rounded behind; fastigium of the vertex convex (instead of grooved), wider than long, the bounding walls rounded, low, meeting in front in more than a right angle (♀) and with a slight median carina at the apex (thus calling to mind the vertex of *Amblytropidia*); lateral foveolæ subobsolete, represented only by slight irregular depressions. Face, when viewed in profile, very gently sinuate, owing to the prominence of the frontal costa between the antennæ and a slight depression of it at the ocellus, its sides gently divergent to just below the ocellus, where they approach and again diverge to the clypeus; plain above, but gently sulcate below the ocellus. Antennæ filiform, apparently shorter than the combined length of the head and pronotum (partially broken in the specimen at hand). Pronotum with the sides nearly perpendicular, gently contracted in the middle, the median and lateral carinæ prominent, the latter broadly arcuate and approaching much more closely on the front margin of the anterior lobe than on the hind edge of the posterior lobe; the transverse sulci very dim, the last about the middle; front edge straight, the hind edge scarcely angulate; sides about as deep as long, their upper edge excavated, so as to leave a broad irregular depression next the lateral carinæ on the anterior lobe, the remaining portion, except near the middle, roughened. Tegmina about as long as the abdomen, with

comparatively few veins, rather narrow, the scapular area gently dilated, and the apex evenly rounded. Hind femora compressed, moderately broad on the basal half, more slender apically, the carinæ smooth. Hind tibiæ with 13–14 spines in the outer row. Valves of the ovipositor free, fairly slender, evenly curved apically.

1. **Parachloebata pratensis,** sp. n. (Tab. I. figg. 10, 10 *a*, ♀.)

Parachloebata prattensis (sic), Sauss. ined.

General colour light brownish-testaceous, streaked along the upper edge of the sides of the pronotum to the transverse sulcus, and beyond the disc to the hind edge, with black. There are also two narrow dark bands, enclosing a wider light one on the occiput, beginning at the back edges of the fastigium and continuing to the pronotum. Tegmina with a prominent subcostal green stripe, reaching from the base to beyond the middle, their general colour cinereous. Wings, as showing through the tegmina, slightly infuscated. Hind femora internally and on the upper edge of the disc, along with the apex of the hind tibiæ, infuscated.

Length of body, ♀, 27; of pronotum 5, of tegmina 21, of hind femora 15·5 millim.

Hab. ANTILLES, Cuba (*Poey, in Mus. Geneva*).

A single female.]

LINOCERATIUM, gen. nov.

Bearing a general resemblance to *Orphulella*, but differing from that genus in the more slender form, narrower elytra, the almost complete obliteration of the lateral carinæ on the anterior lobe of the pronotum, and the much larger and more prominent eyes.

Head rather large, the occiput ascending above the plane of the disc of the pronotum; the eyes large, prominent, semiglobular in the ♂, a little pointed above in the ♀; vertex of medium width, about half as wide as the shorter diameter of the eyes (♀), or somewhat less (♂), deeply sulcate, and with a faint median carina at the bottom near its front margin, the bounding walls high, meeting at front in a right angle in the ♀, somewhat acute in the ♂; lateral foveolæ present, but not very decided, varying from linear to elongate triangular. Frontal costa fairly prominent, narrow above, gradually widening below, continuous and sulcate to the clypeus. Antennæ of medium length, filiform. Face short, straight, oblique. Pronotum considerably widened behind, the two lobes of about equal length, the lateral carinæ nearly obliterated, and arcuate on the anterior, more pronounced and strongly divergent on the posterior lobe; hind border evenly rounded, the sides higher than long, and with the anterior portion of the lower edge profoundly, obliquely truncate. Tegmina long, narrow, reaching beyond the tip of the abdomen in both sexes, the apex evenly rounded, the veins and veinlets feeble. Posterior femora moderately heavy, about reaching (♀) or greatly surpassing (♂) the tip of the abdomen. Hind tibiæ provided with nine or ten spines in the outer row. Abdomen slender, in the ♂ not especially modified, but with the supra-anal plate triangular, the apical half bent downward and separated from the anterior portion by a transverse carina. Cerci moderately heavy and evenly tapering, about three and one-half times as long as the extreme basal width.

1. **Linoceratium boucardi,** sp. n.

General colour of the ♂ (the ♀ relatively more uniform in tint) pale testaceous, with a rather broad dusky band on each side, beginning at the hind margin of the eyes and traversing the upper half of the sides of the pronotum and pleura to the base of the abdomen. The latter with two or three rather large patches of the same colour on the sides. Apex of hind femora and base of tibiæ also dusky. Tegmina above with the disc of the pronotum and the middle of the occiput pale testaceous, inclining to greenish in the ♂, darker in the ♀. The dusky band of the sides of the pronotum crosses over to the sides of the disc on the hind lobe. Costal edge and discal area of the tegmina uniformly fuliginous in the ♂, but in the single ♀ specimen at hand shows heavy flecking on the basal portion, the apical part in the latter uniformly dark as in the ♂. Wings apparently fuliginous throughout.

Length of body, ♂ 12, ♀ 20; of antennæ, ♂ 6·5, ♀ 6; of pronotum, ♂ 2·25, ♀ 3·35; of tegmina, ♂ 11–12, ♀ 15; of hind femora, ♂ 8–9, ♀ 11 millim.

Hab. BRITISH HONDURAS, Rio Sarstoon (*Blancaneaux*: ♂); PANAMA (*Boucard*: ♂).—COLOMBIA, San Diego, Dept. Magdalena (*H. H. Smith, in mus. Carnegie*: ♂ ♀).

It would seem that this insect is rather widely distributed in the lower regions at least of Tropical America. Six examples have been seen by me.

[CLINOCEPHALUS, Morse.

Clinocephalus, Morse, Psyche, vii. p. 326 (1896); McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 232, 233 (1897); Scudder, Cat. Orthopt. U.S. p. 25 (1900).

Although this genus does not appear to be represented in the various collections examined, it is mentioned as one that is likely to occur in the region under investigation. Only a single species has thus far been described.

1. **Clinocephalus elegans**, Morse.

Clinocephalus elegans, Morse, Psyche, vii. pp. 326, 402, t. 7. figg. B, B *a* (1866)[1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 233, t. 3. figg. 16, 16 *a* (1897)[2]; Scudd. Cat. Orthopt. U.S. p. 25 (1900)[3].

Hab. NORTH AMERICA, Atlantic States from Massachusetts to Texas[1–3].

To be looked for in low, wet places, and especially where the water is brackish.]

DICHROMORPHA, Morse.

Chloëaltis, Scudder, Bost. Journ. Nat. Hist. vii. p. 445 (1862); Brunner, Rev. Syst. Orthopt. p. 119 (1893) (part.).
Opsomala, Thomas, Trans. Illinois Agr. Soc. p. 451 (1865) (part.).
Chrysochraon, Thomas, Syn. Acrid. N. Amer. p. 75 (1873) (part.).
Truxalis, Stål, Recens. Orthopt. i. p. 92 (1873) (part.).
Dichromorpha, Morse, Psyche, vii. p. 326 (1896).

The locusts which are included in the genus *Dichromorpha* do not appear to be very numerous in species, since but four are known to the present writer. Two of these are normally long-winged and are described as new; they come from the same locality on the west coast of Mexico. The others are normally short-winged and are remarkably wide-spread: one of them, *D. viridis*, Scudd., ranges northward from Vera Cruz to Southern Canada; and the other, *D. australis*, Bruner, is said to occur in Brazil, Paraguay, and the Argentine Republic as far south as Northern Patagonia. Both of these latter sometimes occur as long-winged individuals, but, as stated above, are normally brachypterous. They are also represented by two colour-varieties, viz. green and testaceous, and in the latter are very frequently thickly marked with dark brown

and black flecks. These insects may be found about the edges of groves, the margins of streams, and on cultivated ground where the vegetation is moderately rank.

Table for separating the Species of Dichromorpha.

A¹. Normally with the tegmina and wings abbreviated, the apex of the former acuminate.	
*b*¹. More robust: the pronotum with the sides parallel, its posterior margin distinctly angulate. Antennæ subfiliform, the basal joints but little flattened. [Mexico and U.S.]	1. *viridis*, Scudd.
*b*². Rather slender: the pronotum gently constricted in the middle, its posterior margin rounded. Antennæ short, the basal joints considerably flattened. [Argentina &c.]	[4. *australis*, Bruner.]
A². Normally with the tegmina and wings fully developed, the apex of the former rounded. [West coast of Mexico.]	
*b*¹. Slender. The vertex provided in front with a distinct carina. Hind tibiæ with 11–13 spines in the outer row	3. *longipennis*, sp. n.
*b*². Robust. The vertex without a distinct median carina. Hind tibiæ with 10 spines in the outer row	2. *mexicana*, sp. n.

1. **Dichromorpha viridis**, Scudd.

Chloëaltis viridis, Scudd. Bost. Journ. Nat. Hist. vii. p. 445 (1862)[1]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 6. fig. 11, t. 10. fig. 5 (1872)[2]; Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 88 (1877)[3]; Thomas, Rep. Ent. Illinois, ix. pp. 92, 99 (1880), &c.[4].

Stenobothrus viridis, Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 755 (1870)[5].

Chrysochraon viridis, Thomas, Syn. Acrid. N. Amer. p. 75 (1873)[6]; Scudd. in Hitchcock's Rep. Geol. N. H. i. p. 372 (1874)[7]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid., v. p. 871 (1876)[8]; Bruner, Publ. Nebr. Acad. Sci. iii. p. 23 (1893)[9].

Tryxalis viridis, Thomas, Bull. Illinois Mus. Nat. Hist. i. p. 61 (1876)[10].

Dichromorpha viridis, Morse, Pysche, vii. pp. 326, 383–384, t. 7. figg. 7, 7 *a*, *b* (1896)[11]; Scudd. Cat. Orthopt. U.S. p. 25 (1899)[12].

Chloëaltis punctulata, Scudd. Bost. Journ. Nat. Hist. vii. p. 455 (1862)[13]; Bruner, Rep. Comm. Agr. 1885, p. 307[14]; Fernald, Orthopt. New Engl. p. 36 (1887)[15].

Stenobothrus punctulata, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 755 (1870)[16].

Chrysochraon punctulatum, Thomas, Syn. Acrid. N. Amer. p. 76 (1873)[17]; Bruner, Canad. Ent. ix. p. 144 (1877)[18]; 3rd Rep. U.S. Ent. Comm. p. 55 (1883)[19].

Chloëaltis viridis punctulatum, Beutenm. Descr. Cat. Orthopt. p. 292 (1894)[20].

Opomala brevipennis, Thomas, Trans. Illinois Agr. Soc. v. p. 451 (1865)[21].

Truxalis angusticornis, Stål, Recens. Orthopt. i. p. 105 (1873)[22]; Thomas, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid. v. p. 871 (1875)[23].

Hab. North America[1–23], East of Rocky Mountains.—Mexico, gulf or east coast (*Bruner*).

This widely-spread insect is not represented in the collections made by the Editors

of the 'Biologia,' but it is known to occur along the eastern, or gulf, coast of Mexico. *D. viridis* has been reported from nearly every locality between Carrizo Springs, Texas, and the Canadian Territory to the north of the United States east of the Rocky Mountains.

2. **Dichromorpha mexicana,** sp. n. (Tab. I. figg. 18, 18 *a*, ♀.)

About the size of, and as robust as, *D. viridis*, but with fully developed tegmina and wings.

Head as wide as the front edge of the pronotum, the occiput very gently ascending above the plane of the disc of the latter, the lateral carinæ of the vertex meeting at the fastigium in a right angle in both sexes, deeply sulcate, and without trace of a median carina; face gently (♀) or considerably (♂) retreating below; frontal costa only moderately prominent, in the ♀ rather wider and with the sides parallel from near the top to a point a little below the ocellus, then gently diverging to the clypeus, in the ♂ slightly divergent throughout, shallowly sulcate in both sexes. Antennæ about normal. Pronotum with lateral carinæ and sides nearly parallel, hardly perceptibly approaching in the middle; lateral carinæ cut in some specimens at least by both the middle and last transverse sulci; hind margin broadly angulate. Tegmina and wings reaching (♀), or considerably surpassing (♂), the tip of the abdomen. Hind femora normal, the tibiæ with ten spines in the outer row.

General colour green, with the usual dark markings along the sides of the pronotum, pleura, and tegmina. Knees in the ♂ dark, in the ♀ hardly at all infuscated; tibiæ and feet infuscated and with a dark purplish tinge. A single ♀ is uniformly wood-brown, as often seen in this sex of *D. viridis*.

Length of body, ♂ 16, ♀ 26; of pronotum, ♂ 4, ♀ 5·35; of tegmina, ♂ 13·5, ♀ 17; of hind femora, ♂ 10·5, ♀ 14 millim.

Hab. Mexico, Sinaloa (*Behrens, in coll. Scudder*: ♂), Tepic (*coll. Calif. Acad. Sci.*: ♂ ♀).

Nine specimens.

3. **Dichromorpha longipennis,** sp. n.

A much larger, slenderer and smoother-bodied, longer-winged insect than *D. viridis*, even than *D. mexicana*, to which latter it is more nearly related. Superficially rather like an *Orphulella*, but the straight lateral carinæ and the position of the last transverse sulcus of the pronotum at once remove it from that genus.

Head as wide as the front edge of the pronotum, very gently ascending above the plane of it; vertex provided with rather high lateral carinæ, which meet at the fastigium in a little less than a right angle (♀), or one that is decidedly acute (♂), and a moderately deep sulcus, the latter with a well-defined median carina; face somewhat oblique, the frontal costa moderately prominent above, evenly diverging below, sulcate throughout; antennæ with the joints plainly flattened, in the ♂ slightly longer than the head and pronotum together, in the ♀ rather shorter. Pronotum with the lateral carinæ gently converging in front; the last transverse sulcus very plain, cutting all three carinæ; hind margin broadly angulate. Tegmina and wings complete, in the ♀ reaching to, or beyond, the tip of the abdomen, in the ♂ to the tip of the hind femora; the former slender and with the apex evenly rounded. Hind femora rather long and slender, in the ♀ reaching to, or a little beyond, and in the ♂ to nearly one-third their length beyond, the apex of the abdomen. Hind tibiæ with 11–13 spines in the outer row.

General colour grass-green, with the feet, tibiæ, and apex of hind femora more or less tinged with brownish-purple. A narrow dark line extends along each side from behind the eyes, following just below the lateral carinæ of the pronotum to the tegmina, where it continues and covers the discal field to the apex. In some specimens the entire tegmina, save their anterior or costal area, becomes thus darkened. Frequently the colouring of the tegmina is of a purplish tinge. In the ♂, which is always somewhat darker-coloured than the other sex, the dorsal field is green, as in both *D. viridis* and *D. mexicana*.

Length of body, ♂ 16, ♀ 22–24; of antennæ, ♂ 7, ♀ 5–7; of pronotum, ♂ 3·65, ♀ 4·5–5; of tegmina, ♂ 14, ♀ 15–19; of hind femora, ♂ 11, ♀ 12–14 millim.

Hab. MEXICO (*coll. Calif. Acad. Sciences*).

One male, six females, and two nymphs.

[4. **Dichromorpha australis,** Bruner.

Dichromorpha australis, Bruner, Sec. Rep. Merchants' Locust Invest. Comm. B. A. pp. 28, 29 (1900) [1].

Metaleptes angusticornis, Giglio-Tos, Boll. Mus. Zool. Torino, no. 184, p. 8 (1894) [2].

Dichromorpha viridis, Giglio-Tos, op. cit. no. 302, p. 24 (1897) [3].

Hab. SOUTH AMERICA, Argentine Republic (*coll. L. Bruner*), Paraguay (*Giglio-Tos*).

D. australis is to be met with in moderate numbers on the pampas of Argentina northward and north-westward, in Paraguay, and both the Argentine and Bolivian chacos.]

PHANEROTURIS, gen. nov.

Phaneroturis, Saussure (MSS.).

This genus is based on a single imperfect male specimen. It is so characteristically different from every other locust known to me that there can be no doubt as to its distinctness.

Form robust; head large; antennæ heavy, long, and with the joints decidedly flattened on the basal half at least, possibly as long as the hind femora when complete (they are imperfect in the only specimen at hand, only about half of the joints remaining). Eyes large and prominent, a little longer than that portion of the cheeks below them, pointed above, regularly rounded behind and almost straight in front. Vertex about half as wide as the shortest diameter of the eyes, the fastigium gently depressed in front, deeply sulcate and provided in its anterior part with a median carina, which broadens backwards so as to form a wedge-like forward projecting arrangement of the occiput; lateral walls high, meeting in front in less than a right angle; no definite lateral foveolæ. Face long, strongly oblique, straight when viewed from the side; frontal costa sulcate throughout and continuous to the clypeus, its lateral carinæ somewhat undulate, approaching both above and below the ocellus, slightly widest below. Pronotum short, cylindrical; the front edge straight; the hind margin above broadly angulate; sides longer than high; median carina coarse, percurrent, cut a little back of the middle by the profound last transverse sulcus; lateral carinæ less conspicuous, slightly arcuate, approaching near the middle and also severed by the last sulcus. Tegmina a little shorter than the abdomen, the apex broadly rounded, the scapular area narrow and not regularly reticulate with oblique veins, the discal area irregularly veined even to the apex, which is likewise somewhat coriaceous. Anterior portion of the wing of the ♂ as large as the rest, broadly and regularly fenestrate, both edges of this area being much strengthened, reminding one of the elytron of a male *Œcanthus.* Abdomen short, much slenderer than the anterior portion of the insect, the apex blunt, plain. Hind femora robust, extending fully one-half their length beyond the tip of the abdomen. Hind tibiæ with ten spines in the outer row.

1. **Phaneroturis cupido,** sp. n. (Tab. I. fig. 17, ♂.)

Phaneroturis cupido, Saussure (MSS.).

General colour pale testaceous with a greenish tinge, the light colour somewhat relieved by the slight darker line at the upper edge of the sides of the pronotum, the black anterior heavy edges of the wings, and the dark apex of the hind femora and of the base of the tibiæ, which latter are entirely infuscated, save a broad subbasal pale annulus. Antennæ infuscated apically.

Length of body, ♂, 12·5; of antennæ (approximate) 9, of pronotum 2·4, of tegmina 6, of hind femora 9 millim.

Hab. GUATEMALA (*Mus. Geneva*: no. 1082).

This insect is certainly one of the most remarkable that has ever come to the writer's notice, and is fully as aberrant for the subfamily to which it belongs as is *Scolocephala mirabilis*, Bruner, to be described on a succeeding page. A careful search should be made for additional specimens and, when found, notes taken regarding their habits, which, when ascertained, will no doubt prove interesting. The type bears a green label with a heavy black border, on which is written the locality "Guatemala."

[CHLOËALTIS, Harris.

Locusta (*Chloëaltis*), Harris, Treat. Ins. Inj. to Veg. p. 160 (1852); ibid. Flint ed. p. 184 (1863) (part.).

Chloëaltis, Scudder, Bost. Journ. Nat. Hist. vii. p. 456 (1862); Thomas, Ninth Rep. Ins. Illinois, p. 84 (1880); Brunner, Rev. Syst. Orthopt. p. 119 (1893) (part.).

Chloëaltis, Morse, Psyche, vii. pp. 327, 419, figg. 11, 11 *a* (1896); McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 227, 228 (1896).

Chrysochraon, Thomas, Syn. Acrid. N. Amer. p. 74 (1873) (part.).

Stenobothrus, Scudder, Bost. Journ. Nat. Hist. vii. p. 456 (1862) (nec Fischer) (part.).

Truxalis, Thomas, Bull. Illinois Mus. Nat. Hist. i. p. 61 (1876) (part.).

The insects of this genus are naturally confined to the cooler portions of temperate North America, either by a northern or alpine distribution. *Chloëaltis* is therefore to be looked for in alpine regions of Northern Mexico. Two species are known to inhabit North America.

Table for separating the Species of Chloëaltis.

A¹. Posterior margin of the disc of the pronotum straight; the lateral lobes in the ♂ black . . . . . 1. *conspersa*, Harr.

A². Posterior margin of the disc of the pronotum obtusely rounded; the lateral lobes in the ♂ not black . . . . . 2. *abdominalis*, Thom.

1. **Chloëaltis conspersa**, Harris.

The synonymy of the species is rather extensive and need not be given here. It has also been described under the additional names of *C. abortiva*, Harris, and *C. melanopleurus*, Scudder.

Hab. NORTH AMERICA, from Lake Winnipeg to Texas, and possibly to the northern tablelands of Mexico.

Not contained in any of the Mexican collections examined.

2. **Chloëaltis abdominalis**, Thomas.

Chrysochraon abdominalis, Thomas, Syn. Acrid. N. Amer. p. 74 (1873)[1]; Bruner, Third Rep. U.S. Ent. Comm. p. 55 (1883)[2].

Chloëaltis abdominalis, Bruner, Canad. Ent. xvii. p. 10 (1885)[3]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 229 (1896)[4]; Scudd. Cat. U.S. Orthopt. p. 25 (1889)[5]; Scudd. & Cock. Proc. Dav. Acad. Nat. Sci. ix. p. 26 (1902)[6].

Hab. NORTH AMERICA[1–6], Rocky Mountain region from the far north to Central New Mexico, and possibly also at suitable localities in Northern Mexico.]

[NAPAIA, McNeill.

Napaia, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 213, 214 (1897); Scudder, Cat. U.S. Orthopt. p. 25 (1900).

Œonomus, Scudder, Proc. Amer. Acad. Arts & Sci. xxxv. pp. 47, 48 (1899).

This genus of locusts seems to be confined to the extreme south-western portion of the United States, and will certainly be found to occur also across the international boundary-line on Mexican soil. Only a single species is known at present.

1. **Napaia gracilis**, McNeill. (Tab. I. figg. 2, 2 *a*, ♂.)

Napaia gracilis, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 213, 214, t. 2. figg. 6, 6 *a–d* (1897)[1]; Scudd. Cat. U.S. Orthopt. p. 25 (1900)[2].

Œonomus alta, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. pp. 47, 48 (1899)[3].

Hab. NORTH AMERICA[1–3], Los Angeles (*Coquillette*), Mt. Wilson, Altadena, California, at an altitude of 2400 feet (*Morse*).]

[HORESIDOTES, Scudder.

Horesidotes, Scudder, Proc. Amer. Acad. Arts & Sci. xxxv. p. 49 (1899).

1. **Horesidotes cinereus**, Scudd.

Horesidotes cinereus, Scudd. loc. cit. pp. 49, 50 (1899)[1]; Cat. U.S. Orthopt. p. 26 (1900)[2].

Hab. NORTH AMERICA, Palm Springs, California (*A. P. Morse*).

It occurred on grasses in dry places in Palm Cañon and West Cañon.]

MELANOTETTIX, gen. nov.

Closely related to *Stenobothrus*, from which genus it differs in its members being exceptionally long-legged and short-winged. It also approaches *Gomphocerus* in the structure of the pronotum, but lacks the clavate antennæ.

General build rather robust, the body evenly covered with a fine silken pubescence. Head rounded above, moderately short back of the eyes, high, as broad above as below. Eyes nearly globular, prominent, about as long as the cheeks below them. Vertex as wide as the shorter diameter of the eyes, the fastigium depressed, its lateral walls meeting in front at slightly less than a right angle, gently sulcate, and with a prominent median carina; lateral foveolæ triangular, not deeply impressed, longest above. Face gently oblique and sinuate when viewed from the side, the frontal costa prominent, especially between the antennæ, its sides coarse and parallel to below the ocellus, but divergent beyond and becoming very heavy at the base of the clypeus, sulcate below the antennæ; lateral carinæ of the face parallel on the upper two-thirds, divergent below. Antennæ heavy, considerably longer than head and thorax together,

the joints somewhat flattened. Pronotum a little broader behind than in front, the disc angulate on the posterior margin, rounded in front; lateral carinæ slender on the anterior lobe, arcuate and closely approaching back of the middle, much heavier and greatly diverging on the posterior lobe; sides about as high as long, the front edge rounded, the posterior edge broadly hollowed out and the lower sinuate, with a moderately broad, raised, smooth, white patch extending obliquely forward and upward into the disc from the lower hind corner. Tegmina strongly abbreviated, the costal and dorsal edges broadly rounded, the latter not quite attingent, the apices somewhat acuminate. Apex of the abdomen short and blunt; cerci of the ♂ moderately long and slender, directed gently upward and backward, tapering on the basal half, nearly equal beyond and gently bowed inward; supra-anal plate triangular, about as long as broad, the apical half gently bent downward. Posterior femora rather long and moderately robust, extending about one-third of their length beyond the tip of the abdomen, the spines on the inner edge much longer and heavier than those on the outer row, the latter ten in number.

1. **Melanotettix dibelonus,** sp. n. (Tab. I. figg. 16, 16 *a*, ♂.)

General colour of the sides of the head, pronotum, pleura, abdomen, legs, and antennæ, as well as that of the pectus and venter, coal-black. Occiput, disc of pronotum, save a small triangular patch just inside of the lateral carinæ on the hind lobe, and a band of equal width along the dorsum of the abdomen to the base of the supra-anal plate, brownish-testaceous. Dorsal edges of tegmina pale, with a greenish tinge. Eyes dull ferruginous. Palpi and the raised oblique smooth patch on the sides of the pronotum white.

Length of body, ♂, 19; of pronotum 4·35, of tegmina 4·75, of hind femora 13 millim.

Hab. Mexico, Acaguizotla in Guerrero 3500 feet (*H. H. Smith*).

A single male, captured in the month of October.

A very peculiar locust. Judging from its general obscure colouring, if not a denizen of the forest, it must be confined in its distribution to shady localities. It would be interesting to see the other sex, and also to know more definitely about the haunts of the species and the probable cause of the peculiar black tint.

[STENOBOTHRUS, Fischer.

Stenobothrus, Fischer, Orthopt. Eur. p. 313 (1843); Brunner, Prodrom. Eur. Orthopt. p. 100 (1882); Rev. Syst. Orthopt. p. 122 (1893); Morse, Psyche, vii. p. 327, fig. 12 (1896).

Gomphocerus, Stål, Recens. Orthopt. i. p. 93 (1873) (part.).

Gomphocerus, Bolivar, Orthopt. de Esp. p. 107 (1876).

Chorthippus, Fieber, and *Gryllus* and *Acridium,* auct.

This genus, which is so extensive in the eastern, is but poorly represented in the western hemisphere. Of the three or four forms found in North America but one is likely to occur in our region, viz. *S. curtipennis.*

1. **Stenobothrus curtipennis,** Harris.

Locusta curtipennis, Harris, Cat. Ins. Mass. p. 56 (1835)[1].

Locusta (*Chloëaltis*) *curtipennis,* Harris, Treat. Ins. Inj. to Veg. p. 184, t. 3. fig. 1 (1862)[2]; Rathv. Rep. U.S. Comm. Agr. 1862, p. 368, fig. 28[3].

Stenobothrus curtipennis, Scudd. Bost. Journ. Nat. Hist. vii. p. 456 (1862)[4]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 754 (1870)[5]; Thomas, Syn. Acrid. N. Amer. p. 91 (1873)[6]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 261 (1897)[7].

Stenobothrus longipennis, Scudd. Bost. Journ. Nat. Hist. vii. p. 456 (1862) [8]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 754 (1860) [8]; Morse, Psyche, vii. pp. 14, 104 (1894) [10].

Stenobothrus coloradensis, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 260, 262–263, t. 5. figg. 25, 25 *a*, *b* (1897) [11].

Hab. North America[1–11], to 40° latitude and beyond, from the Atlantic Ocean to the Rocky Mountains, southward only at higher elevations, becoming subalpine in New Mexico.

Not contained in any of the Mexican collections.

This insect is common on low, wet meadows over a much more extended region than is generally supposed. Possibly the other recognized American species inhabit similar localities.]

GOMPHOCERUS, Thunb.

Gomphocerus, Thunberg, Mém. Acad. Pétersb. v. p. 221 (1815); Serv. Hist. Nat. Ins. Orthopt. p. 754 (1839); Stål, Recens. Orthopt. i. p. 93 (1873); Bolivar, Orthopt. Esp. pp. 100, 107 (1876) (part.); Brunner, Prodrom. Eur. Orthopt. p. 128 (1882); and others.

The known representatives of this genus are, for the most part, confined to the Oriental regions, particularly northward, and in the mountain districts of Middle and Southern Europe. In America there are three or four recognized species which are still referred to it. Two of these have been taken in places not very remote from the northern boundary of Mexico. The collections before me contain a single specimen of an undescribed species coming from Cuernavaca, in the State of Morelos, Mexico. Undoubtedly, the mountain-regions bordering the plateaux of the intervening country will disclose others when carefully investigated. This new form, together with the two known North-American species already referred to, may be distinguished by the subjoined analytical Table:—

Table for separating the Species of Gomphocerus.

A. Fastigium of the vertex decidedly angulate and provided with profound lateral foveolæ. Posterior femora slender.

b[1]. Antennæ, even of the ♀ (those of the ♂ always relatively much longer), equal in length to the head and thorax combined. Fastigium of the vertex in the ♂ somewhat acute. [Plains.]

c[1]. Larger (length 17–19 millim.). The anterior tibiæ of ♂ not decidedly expanded apically . . . . . [1. *clepsydra*, Scudd.]

c[2]. Smaller (length 14–15 millim.). The anterior tibiæ of ♂ slightly expanding apically, and somewhat sulcate externally . . . . [2. *clavatus*, Thom.]

b[2]. Antennæ shorter, in the ♂ about equalling the combined length of the head and pronotum. Fastigium of the vertex more obtuse, a

right angle (♂) or greater (♀). The anterior tibiæ rather heavy apically. [Alpine.] . . . . . [3. *charpenterii*, Thom.]

A². Fastigium of the vertex rounded and with the lateral foveolæ obscure. Posterior femora robust . . . . . 4. *meridionalis*, sp. n.

[1. **Gomphocerus clepsydra**, Scudder.

Gomphocerus clepsydra, Scudd. in Dawson's Rep. Geol. 49th Par. p. 344 (1875)[1]; Rep. Chief Eng. p. 506 (1876)[2]; Bruner, Third Rep. U.S. Ent. Comm. p. 56 (1883)[3]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 266 (1897)[4].

Gomphocerus euterpe (Dodge, MSS.), Bruner, Canad. Ent. ix. p. 144 (1877)[5]; Third Rep. U.S. Ent. Comm. p. 56 (1883)[6].

Gomphocerus antennaria (Scudder, MSS.), McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 266 (1897)[7].

Hab. North America[1–7], plains of the Saskatchewan to New Mexico and Texas.

An insect occurring at moderate elevations.]

[2. **Gomphocerus clavatus**, Thomas.

Gomphocerus clavatus, Thomas, Rep. U.S. Geol. Surv. v. p. 96 (1873)[1]; Bruner, Third Rep. U.S. Ent. Comm. p. 56 (1883)[2]; Publ. Nebr. Acad. Sci. iii. p. 22 (1893)[3]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 265, fig. 27 (1897)[4].

Hab. North America[1–4].

This insect has much the same distribution as the preceding, but frequents somewhat different localities.]

[3. **Gomphocerus charpenterii**, Thomas.

Gomphocerus charpenterii, Thomas, Bull. U.S. Geol. Surv. Terr. ser. 1, no. 2, p. 65 (1874)[1]; Glover, Illustr. Amer. Ent., Orthopt. t. 16. fig. 8 (1874)[2]; Scudd. Apalachia, viii. t. 41. figg. 1, 2 (1898)[3].

Stenobothrus charpenterii, Thomas, Proc. Dav. Acad. Nat. Sci. i. p. 251 (1876)[4].

Hab. North America[1–4], Rocky Mountain region from the northern boundary of the United States southward into New Mexico.

Unlike the two preceding species, this locust appears to be strictly alpine in its distribution, occurring from 8000 to 13,000 feet above sea-level. It is found at various widely isolated localities on mountain peaks and high plateaux.]

4. **Gomphocerus meridionalis**, sp. n.

A moderately robust insect, with long, heavy hind femora. General colour brownish-cinereous, streaked with testaceous and varied with fuscous and black.

Head a trifle wider than the front edge of the pronotum; occiput on the same level with the disc of the pronotum, somewhat rugose and provided with a percurrent median carina; fastigium short, blunt, and furnished in front with low, coarse carinæ which are evenly curved; lateral foveolæ inconspicuous, elongate-oval or elliptical; frontal costa rather prominent, evenly divergent below, the surface gently

depressed in the vicinity of the ocellus, rather coarsely punctate throughout. Face only slightly oblique, when viewed from the side broadly rounded. Pronotum a little broader behind than in front, the sides somewhat compressed; lateral carinæ rather faint at the point where they approach closest; front edge rounded, hind edge broadly angulate. Tegmina abbreviate, about two-fifths the length of the abdomen. Hind femora heavy at the base, reaching slightly beyond the tip of the abdomen. Hind tibiæ heavy, with long, coarse spines and claws.

Brownish-cinereous, heavily blotched with fuscous. Lateral carinæ and a raised elongate streak near the middle of the sides of the pronotum, an oblique narrow line on the metapleura, and another but perpendicular one just before the insertion of the hind femora, white. Occiput and disc of the pronotum with an equal, black-bordered, testaceous stripe; the lower edges of the sides of the latter also more or less testaceous. Abdomen also with a paler dorsal stripe. Venter and lower side of thorax yellowish. Insect otherwise generally obscured with irregular, coalescing blotches of brownish-fuscous. The hind femora without very decided bands, but generally mottled with brownish colouring. Tegmina flecked with dusky along the discal and dorsal fields.

Length of body, ♀, 22; of pronotum 4, of tegmina 6, of hind femora 13·5 millim.

Hab. Mexico, Cuernavaca in Morelos (*C. C. Deam*).

A single female specimen, captured in January. It is without antennæ, but the blunt vertex and much heavier hind femora at once distinguish the insect from the North-American forms. The species is not represented in the 'Biologia' collection.

BOÖPEDON, Thomas.

Gryllus, Say, Journ. Acad. Nat. Sci. Phil. iv. p. 308 (1825) (part.); Ent. N. Amer., ed. Lec. ii. p. 237 (1859).

Boöpedon, Thomas, Prelim. Rep. U.S. Geol. Surv. Wyoming, pp. 265, 272 (1871); Syn. Acrid. N. Amer. p. 141, t. fig. 11 (1873); Bruner, Canad. Ent. ix. p. 144 (1877); Scudder, Genera and Class. N. Amer. Orthopt. p. 29 (1897); McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 24 (1897).

Judging from the material before me, it seems probable that the true home of the genus *Boöpedon* is the semiarid plateau regions of Mexico. Several of the well-known forms have, it is true, been described from localities outside that district, but most of them come from its immediate borders. Like the representatives of the allied genera, the individuals of several species vary considerably in coloration and also, to some extent, in wing-length. In localities where found, these insects are restricted to certain isolated areas, but are by no means rare, this restriction depending apparently upon some peculiar physical condition of the soil, and perhaps also on the kind of vegetation present. Several of them appear to be more or less gregarious in their habits.

The species known at present together with those now described may be recognized by the subjoined table:—

Table for separating the Species of Boöpedon.

A¹. Pronotum with the last transverse sulcus situated about the middle. Head large, smooth, rounded. Tegmina and wings of the ♂ nearly or quite equalling the abdomen in length, those of the ♀ abbreviated, acuminate. ♂, for the most part, black or blackish.

*b*¹. Hind femora distinctly banded, both internally and externally. Hind tibiæ reddish, 14–15-spined in the outer row, the inner apical spurs very unequal.

*c*¹. ♀ sometimes uniformly fuliginous, but usually yellow varied with brown. [Plains east of the Rocky Mountains.] . . [1. *flavofasciatum*, Thom.]

*c*². ♀ dark, shining, almost uniform ferruginous; lower angles of face, sides of labrum, and tips of tegmina black. [Same locality as preceding.] . . . . . [2. *nubilum*, Say.]

*b*². Hind femora usually uniformly fuscous or deep fuliginous. Hind tibiæ infuscated, 10–11-spined in the outer row, and with the inner apical spurs not very unequal. [Arizona and probably the adjoining portions of Mexico.] . . . . . 3. *fuscum*, sp. n.

A². Pronotum with the last transverse sulcus situated distinctly behind the middle. Head variable in shape, but generally more angulate. Tegmina greatly abbreviated, and with their apices usually rounded or but slightly pointed in both sexes. ♂ nearly or quite as light-coloured as the ♀.

*b*¹. Hind femora long and slender. Hind tibiæ with more numerous (13–15) spines in the outer row. Sides and posterior edges of the pronotum light-coloured.

*c*¹. General colour brownish, varied with black above, lighter beneath. Hind femora obscurely banded. Hind tibiæ dull-coloured, with 13 spines in the outer row. [Prairies of Eastern Nebraska and Kansas.] . . . . . [4. *savannarum*, sp. n.]

*c*². General colour testaceous, varied with orange, fuscous, and black. Hind femora conspicuously banded. Hind tibiæ red on the apical half, with 15 spines in the outer row. Abdomen of ♂ orange-red above. [Arkansas and Texas.] . [5. *auriventris*, McNeill.]

*b*². Hind femora short and comparatively robust. Hind tibiæ with fewer (10–11) spines in the outer row. Sides of the pronotum with their lower edge bordered with testaceous or light colour.

*c*¹. Rather large and robust. General colour very dark fuscous or fuliginous. Face, the lower lateral edge of the pronotum narrowly, and the lower edge of the hind femora, light-coloured. [Tepic, Mexico.] . . . . . 6. *diabolicum*, sp. n.

*c*². Smaller. General colour testaceous. Top of head and disc of pronotum dark fuscous, the sides of the latter above, and the hind femora with the knees and a broad preapical band, black. [Western Mexico.] . . . . . 7. *flaviventris*, sp. n.

[1. **Boöpedon flavofasciatum**, Thomas.

Boöpedon flavofasciatum, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, p. 84[1]; Ann. Rep. U.S. Geol. Surv. Terr. ii. p. 273 (1871)[2]; Glover, Illustr. N. Amer. Ins., Orthopt. t. 8. fig. 10 (1872)[3];

Bruner, Third Rep. U.S. Ent. Comm. p. 58 (1883) [4]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 251 (1887) [5].

Hab. North America [1–5], from Montana to Texas, on the plains and foot-hills along the eastern slope of the Rocky Mountains.

Not represented in the collections seen from Mexico, but probably occurring in the section bordering the Rio Grande.]

[2. **Boöpedon nubilum,** Say.

Gryllus nubilus, Say, Journ. Acad. Nat. Sci. Phil. iv. p. 308 (1825) [1]; Ent. N. Amer., ed. Lec. ii. p. 237 (1859) [2].

Boöpedon nubilum, Thomas, Prelim. Rep. U.S. Geol. Surv. Wyoming, pp. 265, 272 (1871) [3]; Syn. N. Amer. Acrid. p. 141, tab. fig. 11 (1873) [4]; Bruner, Third Rep. U.S. Ent. Comm. p. 58 (1883) [5]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 250, t. 4. figg. 20, 20 *a*, *b* (1897) [6].

Boöpedon nigrum, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, pp. 83, 84 [7].

Hab. North America [1–7].

This species has a very similar distribution to the preceding, and possibly is not distinct from it, the two forms being much closer in their structural characters than any of the others, as will be seen by a reference to the above synoptic Table.]

3. **Boöpedon fuscum,** sp. n.

This insect, as the name indicates, is of a uniform blackish-brown or brownish-black colour throughout. The only variation from this obscure tint, at least in the specimens at hand, seems to be a slight pale area about the mouth, on the tarsi beneath, and a faint replacement of the uniform dusky hue by a reddish tinge on the hind tibiæ.

General build of the ♀ short, robust, and without many sharp ridges, deep grooves, depressions, or decided angles; the surface, for the most part, smooth and moderately glossy or polished. The ♂ more slender, and provided with some of the features mentioned as lacking in the ♀. Head a little broader than the front edge of the pronotum; in the ♀ robust, smooth, shining, without fastigial sulcus, lateral foveolæ, or median carina, all of which, however, are slightly indicated in the ♂; frontal costa very broad, smooth and well-rounded, shading into the face just below the ocellus. Antennæ slightly longer than the head and pronotum together. Pronotum without lateral carinæ, the surface more or less polished, although quite strongly and coarsely punctured and furnished with fine tortuous rugæ; last transverse sulcus cutting the coarse median carina at its middle; anterior edge straight, the posterior edge broadly rounded or subangulate. Tegmina and wings reaching the base of the supra-anal plate (♂), or only half as long as the abdomen (♀), with the apex rounded in the former and acuminate in the latter. Hind femora robust, of medium length, but surpassing the apex of the abdomen in both sexes. Hind tibiæ with 10–11 spines in the outer row. Tip of abdomen of the ♂ blunt and strongly upturned.

Length of body, ♂ 20, ♀ 30–34; of pronotum, ♂ 5, ♀ 8; of tegmina, ♂ 11, ♀ 12; of hind femora, ♂ 12·5, ♀ 20 millim.

Hab. North America, Nogales and Phœnix, Arizona (*R. H. Kunze; J. G. Lemmon*). —? Central America (*coll. Calif. Acad. Sci.*).

Although the specimens described are very similar in general appearance and structure to both *B. nubilum* and *B. flavofasciatum*, there seems to be sufficient

difference between them to warrant their separation. The locality "Central America" is most likely due to an error in labelling, the insect in question probably coming from Northern Mexico or Arizona.

[4. **Boöpedon savannarum,** sp. n.

A long-legged, short-winged, slender insect, most closely related to *B. auriventris*, McNeill, but differing from that species in its more uniform, darker colour, the more slender hind femora, and the greater inequality of the inner apical spurs of the hind tibiæ.

Head large and smooth, broader than the front edge of the pronotum; vertex between the eyes as wide as (♂), or a little wider than (♀), the smaller diametor of one of them, very shallowly sulcate, and provided with blunt lateral walls and median carina, the lateral foveolæ lacking; face rather oblique in both sexes; frontal costa very broad and fading into the face just below the ocellus, scarcely or not at all sulcate. Antennæ slender, longer than the head and pronotum together, in the ♂ reaching the tips of the closed tegmina. Pronotum short, not much longer than the head, with the hind and front edges of about equal width, very gently contracted in the middle; lateral carinæ distinct, arcuate, approaching most nearly in advance of the middle; median carina distinct, cut back of its middle by the last transverse sulcus; lateral lobes high, the anterior and posterior edges oblique and converging below, the lower edge evenly rounded; hind and front edges of the disc very broadly rounded. Tegmina and wings abbreviated in both sexes—those of the ♀ scarcely reaching the apex of the second abdominal segment, subacuminate at the tips, and with their dorsal edges hardly touching; those of the ♂ reaching the apex of the third segment and with their tips evenly rounded, their dorsal edges slightly overlapping. Hind femora compressed, long and slender, extending considerably beyond the abdomen in both sexes; hind tibiæ provided with 13 spines in the outer row, the inner apical spurs very unequal in length, the inner one quite straight and more than double as long as the outer.

General colour above greyish-brown, varied with light testaceous and black. Face and lower side dirty greyish-white. Sides of the pronotum glossy black, with their front edge, the dagger-shaped streak commencing just above the base of the anterior femora and directed upwards and diagonally backwards to a point near the junction of the lateral carinæ, and the back edge of the pronotum itself, yellowish-white. Hind femora below and above testaceous, the outer face grey-brown, but without definite bands, internally with median and postmedian bands, the apices also obscure; tibiæ with a broad pale annulus followed by a dark one, below this dull reddish, the tarsi infuscated. Antennæ reddish-ferruginous on the basal half, becoming darker apically.

Length of body, ♂ 23, ♀ 34; of pronotum, ♂ 4·25, ♀ 6; of tegmina, ♂ 7, ♀ 8; of hind femora, ♂ 15, ♀ 22 millim.

Hab. NORTH AMERICA, Central and Eastern Nebraska (*Bruner*).

Found on sand-hills and prairies.]

[5. **Boöpedon auriventris,** McNeill.

Boöpedon auriventris, McNeill, Canad. Ent. xxxi. pp. 54, 55 (1899)[1]; Scudd. Cat. U.S. Orthopt. p. 27 (1900)[2].

Boöpedon saltator, Sauss. (MSS.)[3].

Hab. NORTH AMERICA [1–2], Arkansas southward into Texas and perhaps into Mexico.

A specimen before me belonging to the Geneva Museum, from Texas (*Boll*), is labelled with the MS. name of *Boöpedon saltator*, Sauss. This insect is most nearly allied to *B. savannarum*, which is found much further northward.]

6. **Boöpedon diabolicum,** sp. n. (Tab. I. figg. 21, 21 *a*, ♀.)

Rather large and robust, with the face, and the underside and the lower edges of the sides of the pronotum, dirty white, the general colour being dark fuscous or fuliginous. The tegmina lateral, very short, reaching only to the apex of the second abdominal segment, their dorsal edges not touching, and their apices bluntly acuminate. Wings very short.

Head large and broader than the front edge of the pronotum; occiput bulging and ascending above the plane of the pronotum; eyes small, not prominent, acuminate above, their front edge nearly straight, about as long as the cheek below them; vertex between the eyes a little wider than their shortest diameter, the fastigium gently sulcate, furnished with a faint median carina and bounded at the sides and in front by blunt carinæ that meet in a right angle, in front and behind immediately over the apex of the eyes making a short turn inward where they terminate, the lateral foveolæ plainly visible from above, elongate; frontal costa prominent, smooth, a little depressed at the ocellus. Antennæ slender, nearly as long as the head and pronotum together. The latter about as wide in front as behind, gently compressed in the middle; median carina narrow, but moderately elevated and almost equally prominent throughout, cut by the last transverse sulcus about one-third of its length from the hind edge; lateral carina well-defined on the front edge of the anterior lobe, but gradually fading so as to be entirely obliterated at the last transverse sulcus; the portions of the surface on the sides of the anterior and posterior lobes punctate and granulate, that on the latter more finely and closely; anterior and posterior edges nearly truncate. Tegmina and wings very much abbreviated, especially the latter. Hind femora somewhat robust, about reaching the tip of the abdomen; tibiæ with 11 spines in the outer row.

In addition to the colour as described above, this insect has the basal half of the antennæ ferruginous and the apical portion infuscated. The hind tibiæ are infuscated above and apically, while below and internally they are testaceous or ferruginous, this latter tint gradually passing into dusky and "shining through" in certain lights.

Length of body, ♀, 36; of antennæ 12, of pronotum 7·6, of tegmina 7, of hind femora 20 millim.

Hab. MEXICO, Tepic (*Gustav Eisen, in coll. Calif. Acad. Sciences*).

A single specimen.

7. **Boöpedon flaviventris,** sp. n.

Of rather small size, but fairly robust in stature. General colour light testaceous or dirty yellowish-white below, darker dorsally. Top of the head and the disc of the pronotum dark fuscous; sides of the latter above, and also the knees and a broad preapical band on the hind femora, black.

Head somewhat broader than the front edge of the pronotum; occiput rounded, slightly ascending above the plane of the pronotum; face moderately oblique, when viewed from the side slightly arcuate, more distinctly so in the ♂; vertex nearly as wide as (♂), or a trifle wider than (♀), the shortest diameter of the eyes, deeply sulcate, the lateral carinæ meeting in front in a little less than a right angle, the median carina inconspicuous in the ♂, nearly obliterated in the ♀, the lateral foveolæ comprised of a number of confluent coarse punctures, visible from above. Pronotum as wide in front as behind, somewhat contracted in the middle; the median carina not prominent, cut back of the middle by the last transverse sulcus; lateral carinæ present as rounded shoulders, and followed above by a narrow pale line; both the anterior and posterior margins of the disc broadly rounded, the latter coarsely granulate along with the sides, the rugosities tending to form transverse wrinkles. Tegmina and wings abbreviated; the tegmina of the ♀ lateral, with their dorsal edges not attingent, rounded at the apex, and reaching the tip of the second abdominal segment, those of the ♂ two-thirds the length of the abdomen and overlapping above. Hind femora rather slender in the ♀, more robust in the ♂, surpassing the tip of the abdomen in both sexes. Tibiæ with 11 spines in the outer row; internal apical spurs subequal.

Top of the head, the disc of the prothorax, and the tegmina dark fuscous, the latter with brown veins, making them appear somewhat lighter. The cavities about the base of the antennæ, a narrow band on the sides of the head back of the eyes, the hind border of the latter, the grooves about the labrum, clypeus, and mandibles, a rather broad band along the upper portion of the sides of the pronotum, and the pleura, black. The lateral bands bordered with a testaceous band, which extends backwards from the upper

apex of each eye to the pronotum, where it marks the position of the lateral carina to the hind margin of the same. Abdomen, above and at the tip, infuscated. Hind femora testaceous, with two complete internal bands, and one and part of a second externally; the apex, and the base of the tibiæ also, black. The latter with a broad, pale, basal annulus, followed by a dusky patch shading into red apically.

Length of body, ♂ 21, ♀ 27; of antennæ, ♂ 12·5, ♀ 11; of pronotum, ♂ 4·5, ♀ 5·6; of tegmina, ♂ 8·5, ♀ 5; of hind femora, ♂ 13, ♀ 17 millim.

Hab. Mexico, Durango or Sinaloa (*Forrer*: ♀), Tepic (*coll. Calif. Acad. Sciences*: ♂).

In its general appearance this insect approaches some of the Stetheophymæ of the Oriental region, but certainly belongs to the genus *Boöpedon* as at present accepted.

PLECTROTETTIX, McNeill.

Stenobothrus (*Plectrophorus*), Saussure, MSS.
Stenobothrus (*Rammatocerus*), Saussure, Rev. et Mag. Zool. xi. p. 317 (1861).
Scyllina, Stål, Recens. Orthopt. i. p. 94 (1873) (part.).
Plectrophorus, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 251, t. 4. figg. 21 *a–c* (1897).
Plectrotettix, McNeill, Psyche, viii. p. 71 (1897); Scudder, Gen. N. Am. Orthopt. p. 29 (1897); Psyche, viii. p. 238 (1898); Cat. N. Am. Orthopt. pp. 27, 95 (1900).

Until specimens of *Scyllina peragrans*, Stål, can be examined and compared with the various species now before the writer, it is a difficult matter to state definitely the relationship which exists between the various forms. Perhaps there are two, or even three, distinct genera represented amongst the material now at hand. If so, they are very closely related and shade imperceptibly one into another. For the present the best course is to leave all the species with which we are now concerned under *Plectrotettix*, with the synonymy suggested by the subdivisions of the following Table *.

Table for separating the Species of Plectrotettix *and others of the* Scyllina-*group* †.

A¹. Tegmina less densely reticulate, the post-radial area provided with two rows of cells and an intercalary vein; frontal costa not especially tumescent; anterior and posterior lobes of the pronotum subequal in length . . . . . [Scyllina, Stål.]

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* That of *Scyllina* and *Pseudostauronotus* would work out as follows:—

SCYLLINA, Stål.

Gomphocerus (*Epacromia*), Stål, Freg. Eug. Resa, Ins., Orthopt. p. 343 (1860).
Scyllina, Stål, Recens. Orthopt. i. pp. 94, 112 (1873); Brunner, Rev. Syst. Orthopt. p. 123 (1893).

PSEUDOSTAURONOTUS, Brunner.

Pseudostauronotus, Brunner, Rev. Syst. Orthopt. p. 123 (1893); Giglio-Tos, Zool. Jahrb. viii. p. 808 (1894); Boll. Mus. Zool. Torino, xii. no. 301, p. 3 (1897).

† Without doubt *Gryllus cyanipes*, Fabr. [Syst. Ent. p. 292 (1775)], belongs to this group, but the description is so brief that it would apply equally well to any one of four or five of the forms tabulated by me. Then, too, his reference "Habitat in America" is indefinite, as both North and South America possess representatives of this section.

b^1. Hind tibiæ provided with 12 spines in the outer row. [Antilles and Eastern South America.]

c^1. Hind tibiæ for the most part red. Insects rather small.

d^1. Tibiæ with apical fourth bluish. [Islands of St. Thomas and Hayti.] . . . . . [*gregarius*, Sauss.]

d^2. Tibiæ wholly red. [Pernambuco, Brazil.]. . . . [*pratensis*, sp. n.]

c^2. Hind tibiæ brownish-purple. Insects larger. [Southern Brazil.] . . . . . [*brasiliensis*, sp. n.]

b^2. Hind tibiæ? [West Coast of Ecuador, Island of Puna.] [*peragrans*, Stål.]

A^2. Tegmina more densely veined, in advance of the middle closely reticulate, the post-radial area densely and irregularly reticulate and without an intercalary vein; frontal costa tumescent; posterior lobe of the pronotum longer than the anterior.

b^1. Hind tibiæ with 9–12 spines in the outer row; the inner claw more than twice as long as the outer, straight on the basal half or two-thirds. [South America.] . . . [PSEUDOSTAURONOTUS, Brunner?]

c^1. Hind tibiæ provided with fewer spines (9–11) in the outer row. Size moderate.

d^1. Tegmina irregularly marked with rather small dark blotches. Hind tibiæ pale, with the apical third bluish . . . . . [*conspersus*, sp. n.]

d^2. Tegmina more regularly marked with larger spots. Hind tibiæ not blue-tipped.

e^1. Largely green, or with the hind tibiæ and the lower sulcus of the femora red. Hind tibiæ with 9 spines in the outer row . . . . . [*pictus*, Bruner.]

e^2. Largely brown and testaceous; hind tibiæ testaceous, the lower sulcus of the hind femora deep blue. Hind tibiæ with 10 spines in the outer row. [Brazil and Paraguay.]. . . . . [*brunneri*, Gigl.-Tos.]

c^2. Hind tibiæ with 12 spines in the outer row. Size large. [Paraguay.] . . . . . [*borellii*, Gigl.-Tos.]

b^2. Hind tibiæ with 13–16 spines in the outer row, the inner claw not more than twice as long as the outer, gently bowed from the base. [Mexico and Central America and ? California.] . . . . . PLECTROTETTIX, McNeill.

c^1. Insects variable in colour, but never in great part green or testaceous. Tegmina with the dark and light markings occupying most of the wing.

d^1. Hind tibiæ at the base reddish-yellow, the apical third bluish, usually with 14 spines in the outer row. Hind femora very seldom crossed above by dusky bands. [Eastern Mexico.] . . . . . 1. *viatorius*, Sauss.

d^2. Hind tibiæ with the basal portion flavous, the apical third but faintly bluish, usually with 15, and sometimes 16, spines in the outer row. Upper edge of the hind femora crossed by dusky bands. [S. Mexico and Central America.] . . . . . 2. *calidus*, sp. n.

c^2. Tegmina with the dark and light markings mostly confined to the disc.

d^1. Hind femora with the lower edge red, the hind tibiæ also mostly of this colour. [Oaxaca.] . . . . . 3. *nobilis*, Walk.

d^2. Hind femora with the lower edge blue or testaceous, the hind tibiæ for the most part purplish or testaceous.

e^1. Insect in great part green. The mottlings in the disc of the tegmina rather irregular. [Central plateau of S. Mexico.] . . . . . 4. *excelsus*, sp. n.

e^2. Insects largely testaceous.

f^1. Larger. The disc of the tegmina black, crossed by a few white blotches. Hind tibiæ on the apical half bluish-tinted. [Orizaba.] . . . . . 5. *macneilli*, sp. n.

f^2. Smaller. The disc of the tegmina scarcely crossed by white blotches. Hind tibiæ uniformly luteous. [California?] . . . . . [6. *patriæ*, Scudd.]

1. **Plectrotettix viatorius**, Sauss.

Stenobothrus (*Rhammatocerus*) *viatorius*, Sauss. Rev. et Mag. de Zool. xi. p. 317 (1861) [1].

Stenobothrus viatorius, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 756 (1870) [2]; Thomas, Syn. Acrid. N. Amer. p. 206 (1873) [3].

Scyllina viatoria, Stål, Recens. Orthopt. i. p. 112 (1873) [4]; Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. pt. 3, p. 64 (1895) [5].

Plectrophorus viatorius, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 252, 253, t. 4. figg. 21, 21 *a–c* (1897) [6].

Plectrotettix viatorius, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 95 (1900) [7].

Hab. Mexico [1–7], eastern slope.

This insect is exceedingly common in some portions of Eastern Mexico, where it at times becomes a pest to cultivated crops. Saussure's type, a female, is before me as I write. Although quite variable in colour, the species is readily separable from the other forms by the characters mentioned in the synoptic table.

2. **Plectrotettix calidus**, sp. n.

This form is variable in colour, but is never in great part green or testaceous. It differs from *P. viatorius*, its nearest ally, in the larger size, the comparatively longer hind femora and wings, and the generally darker coloration; the hind femora have the upper edge, as well as the outer disc, crossed by dusky bands; and the hind tibiæ, as a rule, are also provided with one or two more spines in the outer row—the number varying from 14–16, instead of 13 or 14.

Length of body, ♂ 31–33, ♀ 40–43; of pronotum, ♂ 5, ♀ 7–7·5; of tegmina, ♂ 28, ♀ 35; of hind femora, ♂ 22, ♀ 36·5 millim.

Hab. MEXICO, Cuernavaca in Morelos and also in Guerrero (*O. W. Barrett*); NICARAGUA (*Shimek*); COSTA RICA (*Bruner*, *Biolley*).

3. **Plectrotettix nobilis,** Walk.

Stenobothrus nobilis, Walk. Cat. Dermapt. Salt. Brit. Mus. v., Suppl. p. 79 (1871)[1]; Thomas, Syn. Acrid. N. Amer. p. 209 (1873)[2].

Hab. MEXICO, Oaxaca[1 2].

While no specimens of this particular locust occur in the material before me, I have no doubt but that it belongs to the present genus. It seems to be nearly related to *P. viatorius.*

4. **Plectrotettix excelsus,** sp. n.

A medium-sized, rather robust species, with the light parts prevailingly green, and the anterior lobe of the pronotum but little more than one-half the length of the hind lobe. The dark patch on the side of the pronotum not arcuate and confined wholly to the anterior lobe. The tegmina, in the two specimens before me, on the dorsal edges are uniformly cinereous, except near the base, where they are tinged with green. Hind femora with the dusky bands crossing the disc of the outer face and upper edge. Tegmina and wings only a trifle surpassing the tips of the hind femora; the latter with the lower sulcus and the inner face in great part bluish; the tibiæ testaceous basally, becoming blue-tinted apically, 13-spined in the outer row.

Length of body, ♀, 33–35; of pronotum 6, of tegmina 29–30, of hind femora 21 millim.

Hab. MEXICO, Tlalpam and Tacubaya (*O. W. Barrett, in coll. L. Bruner*).

Two females.

5. **Plectrotettix macneilli,** sp. n. (Tab. I. figg. 12, 12 *a*, *b*.)

Slightly smaller than *P. viatorius*, and at once recognizable by its testaceous and black colouring, as shown on the Plate. The other differences are set forth in the synoptical table for the separation of the species.

Length of body, ♂ 24, ♀ 33; of pronotum, ♂ 4·5, ♀ 6; of tegmina, ♂ 23–24, ♀ 30; of hind femora, ♂ 17·5, ♀ 22 millim.

Hab. MEXICO, Orizaba (*H. H. Smith & Godman; L. Bruner*).

Numerous examples.

[6. **Plectrotettix patriæ,** Scudd.

Plectrotettix patriæ, Scudd. Proc. Dav. Acad. Nat. Sci. viii. pp. 27, 95, 96, t. 3. fig. 2 (1900)[1].

Hab. NORTH AMERICA ?, California (*coll. Scudder*).]

[EUPNIGODES, McNeill.

Pnigodes, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 266, t. 6. fig. 28 (1896) (nomen præocc.).
Eupnigodes, McNeill, Psyche, viii. p. 71 (1897).

This genus, which is closely related to the next, so far as known to the writer, is represented by a single species. It is found in California and possibly also in the adjoining portions of Mexico.

1. **Eupnigodes megacephala,** McNeill.

Pnigodes megacephala, McNeill, Proc. Dav. Acad. Nat. Sci. vi. t. 6. figg. 28 *a, b,* p. 267 (1897)[1].

Eupnigodes megacephala, McNeill, Pysche, viii. p. 71 (1897)[2]; Scudd. Cat. Orthopt. U.S. p. 27 (1900)[3].

Hab. North America, Yuba and Butte Counties, California [1–3] (*coll. U.S. Nat. Mus.*).]

ZAPATA, gen. nov.

Related to *Eupnigodes* and *Ageneotettix*, as well as to *Aulocara*, but differing from all of them in several respects. The single species at hand has the hind tibiæ red in the ♀ and glaucous in the ♂ (?), short tegmina, with broadly rounded apex, and a short, scarcely constricted pronotum.

Head short, broad, rounded, slightly wider than the front edge of the pronotum. Eyes subglobular, quite prominent in the ♂, less so in the ♀, nearly as long as (♀), or a trifle longer than (♂), that portion of the cheeks below them; vertex depressed, profoundly sulcate, the lateral carinæ meeting in front in less than a right angle, the lateral foveolæ visible from above, about twice (♂) or one and one-half times (♀) as long as the greatest width, subtriangular, plainest in the ♂; frontal costa sulcate in the ♂ and with the sides nearly parallel, in the ♀ scarcely at all sulcate and with the sides considerably divergent below the ocellus; face, viewed in profile, broadly rounded and subperpendicular in the ♀, moderately oblique and nearly straight in the ♂. Pronotum short, broad, only gently constricted at the middle, the anterior lobe nearly twice as long as the posterior; lateral carinæ nearly obliterated, median carina faint but visible throughout; anterior and posterior edges nearly straight, the latter slightly rounded, sides a little deeper than long; last transverse sulcus profound, almost straight, the others less prominent and somewhat tortuous. Tegmina abbreviate, lobate, the apex broadly rounded and the dorsal edges just about touching. Hind femora moderately heavy, about reaching (♀) or considerably surpassing (♂) the tip of the abdomen. Hind tibiæ with nine spines in the outer row; the inner apical spurs very unequal, those of the ♂ more decidedly so.

1. **Zapata brevipennis,** sp. n. (*Aulocara brevipennis*, Tab. I. figg. 22, 22 *a*, ♀.)

General colour dull wood-brown, above with a slight indication on the tegmina of scattered fuscous dots, below paler. Hind femora testaceous, crossed above and on the inner face with a median and post-median dusky band, apex and base of the tibiæ also dark; the latter red, a little paler basally. In the ♂ the sides of the pronotum are broadly black on the front lobe, less so on the hind lobe, the dark colour being greatly narrowed towards the hind margin; the hind tibiæ glaucous (instead of red); and the median dusky band of the femora appearing on the outer face as an oblique patch.

Length of body, ♂ 11·5, ♀ 17; of pronotum, ♂ 2, ♀ 3; of tegmina, ♂ 3·25, ♀ 4·5; of hind femora, ♂ 8, ♀ 10 millim.

Hab. Mexico, Lerdo in Durango, Camacho in Zacatecas (*L. Bruner*).

One male and one female, both captured in November. It is barely possible that these two insects belong to distinct species and to different genera as well. If this should prove to be the case, the male might readily be referred to the genus *Aulocara*, where it could bear the same specific name. The female insect is the one that has been kept in mind as the type of the genus *Zapata.*

PSOLOESSA, Scudder.

Psoloessa, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 512 (1875); McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 272 (1897).

Stirapleura, McNeill, loc. cit. pp. 271, 272 (part.).

The insects belonging to the present genus are all confined to the semiarid regions of the South-western United States and the adjoining portions of Mexico. The eggs of at least two of the species normally hatch late in the autumn, and the nymphs live through the winter beneath dead grass and other débris. These hibernating insects mature early in the following spring, and are among the earliest locusts of the year.

Table for separating the Species of Psoloessa.

A[1]. Lateral foveolæ of the vertex about twice as long as broad. The face, even in the ♀, rather strongly oblique . . . . . [1. *texana,* Scudd.]

A[2]. Lateral foveolæ of the vertex less than twice as long as broad. The face, at least in the ♀, only slightly oblique.

b[1]. Anterior half of the tegmina infuscated by the extension of the post-ocular brown band. Triangular brown spots on the upper face of the posterior femora not very distinct . . . . . 2. *buddiana,* Brun.

b[2]. Anterior half of the tegmina not infuscated by the extension of the post-ocular brown band. Triangular brown spots on the upper face of the posterior femora sharply defined and very distinct.

c[1]. Tegmina thickly and rather evenly maculate throughout, except in the scapular area, ash-brown . . . . . [3. *maculipennis,* Scudd.]

c[2]. Tegmina plain, reddish-brown . . . . . [4. *ferruginea,* Scudd.]

[1. **Psoloessa texana,** Scudd.

Psoloessa texana, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 512 (1875)[1]; Cent. Orthopt. p. 24 (1879)[2].

Stirapleura texana, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 272, t. 6. fig. 30 *c* (1897)[3].

Hab. North America, Texas, California [1–3].]

2. **Psoloessa buddiana,** Bruner. (Tab. I. figg. 8, 8 *a*, ♀.)

Psoloessa buddiana, Bruner, Proc. U.S. Nat. Mus. xii. p. 61, t. 1. fig. 6 (1889)[1]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 273, 274 (1897)[2].

Hab. North America, Dimmit County, Texas (*coll. Bruner*), Arizona (*Dunn, in coll. Bruner*).—Mexico (*Bruner*), Montelovez in Coahuila (*coll. Scudder*).

[3. **Psoloessa maculipennis,** Scudd.

Psoloessa maculipennis, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 513 (1875)[1]; Cent. Orthopt. p. 25 (1879)[2]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 273, t. 6. fig. 31 (1897)[3].

Hab. North America, Texas, New Mexico, Arizona, and California [1–3].]

[4. **Psoloessa ferruginea,** Scudd.

Psoloessa ferruginea, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 513 (1875) [1]; Cent. Orthopt. p. 25 (1879) [2]; McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 274 (1897) [3].

Hab. NORTH AMERICA, Texas and Arizona [1–3].]

STIRAPLEURA, Scudder.

Dociostaurus, Scudder, Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid., App. JJ, pp. 507, 510 (1876) (nec Fieber).

Stirapleura, Scudder, loc. cit. p. 510 (1876); McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 269, t. 6. figg. 30 *a–c* (1897).

The insects which comprise this genus are of medium size, and in colour are usually cinereous, testaceous, or ochraceous, more or less heavily mottled and streaked with brown and black. In their distribution they seem to be more especially confined to slightly arid localities covered sparsely with vegetation, particularly with various short grasses. In fact, they are genuine "grasshoppers" in all regions where found. The genus is represented in both North and South America, and wherever the species occur they are moderately common. On both continents representatives are to be met with at least fifty degrees from the Equator. With such a wide distribution, and, at the same time, possessing no special requirements other than open country with a limited supply of grass upon which to feed, it is not surprising that there should be a rather large number of known forms. Though very few of them have been captured as yet on the plateaux regions of Mexico and Central America, the proper localities for these insects, the following can safely be said to belong to the fauna treated in the present work.

Table for separating the Species of Stirapleura.

A¹. Posterior tibiæ with the apical spurs on the inner side not very unequal . . . . . [1. *ornata,* Scudd.]

A². Posterior tibiæ with the apical spurs very unequal, the apical one being at least one and one-half times as long as the other.

*b*¹. More slender. Size rather small.

*c*¹. Tegmina and wings somewhat abbreviated, considerably shorter than the abdomen in the ♀, the former acuminate. [Southern Mexico.] . . . . . 8. *brachyptera,* sp. n.

*c*². Tegmina and wings normal, longer than the abdomen even in the ♀. [S.W. U.S. and Mexico centrally on the plateaux.] . 3. *pusilla,* Scudd.

*b*². More robust. Size larger.

*c*¹. Lateral foveolæ about twice as long as broad . . . . . 2. *decussata,* Scudd.

*c*². Lateral foveolæ scarcely, if at all, longer than broad; angulate or rounded.

d^1. These foveolæ well-defined, decidedly angulate. Lateral carinæ of pronotum delicate. Hind tibiæ testaceo-ferruginous.

e^1. Fastigium deeply sulcate, with elevated carinæ which meet in an acute angle in front. Conspicuously mottled and streaked . . . . . [6. *tenuicarina*, Scudd.]

e^2. Fastigium shallowly sulcate and provided with a central carina; blunt in front. Colour uniform reddish-brown, not greatly mottled and streaked . . . . . [7. *mescalero*, Rehn.]

d^2. These foveolæ ill-defined, oblong or rounded. Lateral carinæ of pronotum somewhat interrupted mesially. Hind tibiæ glaucous or dull bluish.

e^1. General colour ferruginous, without markings, or only inconspicuously mottled and streaked with lighter and darker shades . . . . . 4. *salina*, sp. n.

e^2. General colour testaceo-cinereous, very conspicuously mottled and streaked with lighter and darker shades . . 5. *meridionalis*, sp. n.

[1. **Stirapleura ornata**, Scudd.

Dociostaurus ornatus, Scudd. Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid., App. JJ, p. 507 (1876) [1]; Bruner, Third Rep. U.S. Ent. Comm. p. 58 (1883) [2].

Stirapleura ornata, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 270, 271 (1897) [3]; Scudd. Cat. Orthopt. U.S. p. 28 (1900) [4].

Hab. North America, New Mexico [1–4].]

2. **Stirapleura decussata**, Scudd.

Stirapleura decussata, Scudd. Rep. U.S. Geogr. & Geol. Surv. W. 100th Merid., App. JJ, p. 510 (1876) [1]; Cat. Orthopt. U.S. p. 27 (1900) [2].

Psoloessa coloradensis, Thomas, Proc. Dav. Acad. Nat. Sci. i. p. 252, t. 36. fig. 34 (1876) [3].

Hab. North America [1–3], from New Mexico and Arizona northward throughout the Rocky Mountain region and eastward on the plains at least to the 100th meridian.—? Mexico (*Bruner*).

3. **Stirapleura pusilla**, Scudd.

Stirapleura pusilla, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. pp. 52, 53 (1899) [1]; Cat. Orthopt. U.S. p. 28 (1900) [2].

Hab. North America [1 2], New Mexico, Arizona, California (*colls. Scudder & Bruner*); Lower California, Cape San Lucas (*Dr. Palmer, in coll. Scudder*).—Mexico, Mexico City (*C. C. Deam, coll. U.S. Nat. Mus.*).

This insect appears to vary rather more than usual, and the material before me may possibly represent at least two distinct species.

4. **Stirapleura salina,** sp. n.

A robust insect, with the lateral carinæ of the pronotum somewhat interrupted in the middle, and the lateral foveolæ of the vertex rounded and ill-defined. The colour is uniform, being but little variegated, the hind tibiæ dark glaucous.

Head rather large, slightly wider than the front edge of the pronotum, the occiput somewhat raised above the level of the disc of the latter; vertex rather wider than half the shortest diameter of one of the eyes, the fastigium deeply sulcate and provided with a rather prominent median carina which enters it from behind, bounded by a high ridge, the hind ends of which approach and continue over the occiput as supplemental carinæ almost to the front edge of the pronotum and meet in front in a right angle; lateral foveolæ oblong or rounded, only gently sulcate; frontal costa rather prominent above, equally and gently expanding downward, in nowise sulcate, but more or less strongly punctate throughout. Face nearly vertical, somewhat rounded when viewed from the side. Antennæ setaceous, about as long as the head and pronotum combined. Pronotum with the sides constricted, the hind edge somewhat narrower than the front edge; lateral carinæ inconspicuous, to some extent interrupted in front of the middle, where they approach most closely; median carina well-defined throughout, cut a trifle back of the middle by the last transverse sulcus; front edge broadly rounded, hind edge angulate, the apex rounded. Tegmina moderately wide, reaching beyond the apex of the hind femora. The latter rather robust, extending considerably beyond the tip of the abdomen. Claws on the inner side of hind tibiæ very unequal.

General colour plain ferruginous, or ferruginous variegated with brown and dull black. Hind tibiæ dull greyish-blue, the base broadly pale. In one specimen the tegmina are rather evenly flecked with small quadrate dusky spots, and the sides of the pronotum and the upper edge of the hind femora show traces of the usual characteristic dusky markings.

Length of body, ♀, 22; of pronotum 4·1, of tegmina 17, of hind femora 14·5 millim.

Hab. Mexico, Salina Cruz (*C. C. Deam*).

Two females, captured during the month of December.

5. **Stirapleura meridionalis,** sp. n.

Rather robust, but less so than *S. salina*, to which it is most nearly related, but differing from that species in having the hind edge of the pronotum more angulate, the hind femora less heavy, and the fastigium of the vertex more prominent. A highly variegated insect.

Head rather large, wider than the front edge of the pronotum, the vertex about half (♂) or nearly two-thirds (♀) as wide as the shortest diameter of one of the eyes, the sulcation deep and bordered by a rim almost circular in form in the ♀, or cordiform in the ♂, the middle provided with a prominent longitudinal carina, this being continued upon the occiput, where it is accompanied on the first half by two supplemental slightly diverging carinæ; lateral foveolæ shallow, broadly elliptical. Face in the ♂ somewhat oblique, in the ♀ nearly vertical; frontal costa rather wide, the sides approaching just above the ocellus, otherwise gradually diverging below, coarsely punctate and gently sulcate at the ocellus. Pronotum slightly contracted in the centre, the two ends nearly equal in width; front broadly rounded, the hind edge angulate; lateral carinæ strongly converging and somewhat obliterated or interrupted mesially, the last transverse sulcus about the middle. Tegmina and wings complete, about as long as (♀), or considerably longer than (♂), the abdomen. Hind femora moderately robust. Tibial claws very unequal in length.

General colour cinereo-testaceous, varied with dirty white, brown, and black, a characteristic marking being a rather wide, arcuate, pale band on the sides of the head and pronotum, which begins on the lower posterior edge of each cheek and passes upward and backward upon the sides of the pronotum till it reaches and crosses the lateral carinæ, terminating at the back edge of sides of the disc. This light-coloured band is bordered above by one of piceous, which narrows from the eyes backwards, and below by a similar but darker band that is directed forward from the hind edge of the pronotum; below this the sides, on their lower edges, are white, with the narrow upward and forward directed extension so frequent in the members of this genus. The face and pleura are pale, more or less heavily blotched with dark brown and black. The disc of the thorax, the dorsal edges of the tegmina, and the occiput are

likewise more or less regularly light-banded, bordered by dusky. Legs blotched with brown, as is also the abdomen to some extent along its sides. Hind femora with the upper edge provided with the usual dark markings; the hind tibiæ at the base and the apex of the femora dusky, the former with a sub-basal pale annulus, followed by fuscous and then by dull cinereous-blue to the apex, which is again infuscated. Tegmina provided with a well-defined row of rather large, dark, discal blotches in addition to some scattered flecks both above and below.

Length of body, ♂ 14, ♀ 19; of pronotum, ♂ 3·6, ♀ 4; of antennæ, ♂ ♀, 7; of tegmina, ♂ 13, ♀ 16·5; of hind femora, ♂ 10, ♀ 13 millim.

Hab. MEXICO, Salina Cruz (*C. C. Deam*).

One male and one female, captured during the month of December.

[6. **Stirapleura tenuicarina,** Scudd.

Stirapleura tenuicarina, Scudd. Proc. Acad. Arts & Sci. xxxv. pp. 53, 54 (1899) [1]; Cat. Orthopt. U.S. p. 28 (1900) [2].

Hab. NORTH AMERICA, Sierra Blanca, El Paso Co., Texas [1 2].]

[7. **Stirapleura mescalero,** Rehn.

Stirapleura mescalero, Rehn, Proc. Acad. Nat. Sci. Phil. 1902, p. 719 [1].

Hab. NORTH AMERICA, Mescalero Co., New Mexico [1] (*coll. Acad. Nat. Sci. Philad.*).]

8. **Stirapleura brachyptera,** sp. n.

Rather small and slender, with wings and tegmina that only reach about three-fourths the length of the abdomen, the latter acuminate at the apex.

Head of medium size, not greatly wider than the front edge of the pronotum; vertex narrow, the fastigium slightly depressed and meeting at less than a right angle, deeply sulcate; lateral foveolæ prominent, a little longer than high, their inner upper corners broadly rounded; occiput rugose and provided with indications of the usual carinæ; antennæ short, reaching the middle of the pronotum; face gently oblique, the frontal costa compressed above, equally widening below, feebly sulcate in the vicinity of the ocellus, coarsely punctate throughout. Pronotum short, broad, slightly contracted in the middle, subtruncate in front, angulate behind; lateral carinæ heavy on the hind lobe, fairly prominent in front, but faint near the middle; sides provided with faint, raised, oblique ridges or wrinkles. Hind femora short and robust. Hind tibiæ with 9 or 10 spines in the outer row; the spurs on the inner side of the apex very unequal in length.

Brownish-ferruginous, with the usual markings of darker and lighter shades on the head, pronotum, and hind femora. Hind tibiæ testaceous, a little darker apically. Hind femora with two triangular patches on the upper edge. Lower edges of the pronotum pale, with a narrow extension of same colour directed obliquely forward and upward; above this a dusky patch. Tegmina faintly maculate.

Length of body, ♀, 16; of pronotum 2·5, of tegmina 8, of hind femora 9·5 millim.

Hab. MEXICO, Oaxaca (*C. C. Deam*).

One female.

AGENEOTETTIX, McNeill.

Eremnus, McNeill, Proc. Dav. Acad. Nat. Sci. vi. p. 267, t. 6. fig. 29 (1897) (nomen præocc.).
Ageneotettix, McNeill, Psyche, viii. p. 71 (1897).

The members of the genus *Ageneotettix* belong to the arid and semi-arid regions of North America, where they are to be found among the common medium-sized

grasshoppers in most localities. They are especially partial to the short grass-covered hill-sides and plains between the Missouri River and the Rocky Mountains, but also occur almost or quite across the continent to the Pacific southward. While their distribution seems to be chiefly northward, at least two of them belong to the region here under consideration. Besides these two species, the others are included in the subjoined table, as they, too, may eventually be found to occur within the Mexican border.

Table for separating the Species of Ageneotettix.

A^1. Normally with the tegmina and wings not shorter than the abdomen.	
b^1. Larger. The fastigium in the male forming a right angle, or a little obtuse.	
c^1. Hind tibiæ with ten or eleven spines on the outer row. Wings slightly surpassing the abdomen in the male . . .	1. *scudderi*, Bruner.
c^2. Hind tibiæ with nine spines in the outer row. Wings not surpassing the tip of the abdomen in either sex	3. *australis*, sp. n.
b^2. Smaller. The fastigium of the male slightly acute-angled. The tegmina and wings about as long as the abdomen in both sexes	2. *deorum*, Scudd.
A^2. Normally with the tegmina and wings considerably, sometimes greatly, abbreviated in both sexes.	
b^1. Tegmina greatly abbreviated, about one-third the length of the abdomen. Hind tibiæ coral-red, and with only a narrow subbasal pale annulus. (Southern Colorado.)	[*curtipennis*, sp. n.]
b^2. Tegmina moderately abbreviated, from one-half to two-thirds as long as the abdomen. Hind tibiæ usually rather pale red apically, the basal third (except the knee, which is black) testaceous. (South-western Colorado.)	[4. *occidentalis* *, Bruner.]

1. **Ageneotettix scudderi,** Bruner.

Aulocara scudderi, Bruner, Proc. U.S. Nat. Mus. xii. pp. 63, 64 (1890) [1].
Eremnus scudderi, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 268, 269 (1897) [2].
Phlibostroma parvus, McNeill, Psyche, vi. p. 64 (1891) [3].

Hab. North America, from the Saskatchewan River to Texas and New Mexico [1–3].

While no definite records of the capture of this form in Mexican territory seem to be extant, its known wide range, together with the fact that a similar species was observed though not taken in Northern Chihuahua by the present writer, would permit of its being included here.

* Described in a paper on Colorado Orthoptera which is shortly to be published by the Agricultural Experiment Station of that State.

2. **Ageneotettix deorum,** Scudd.

Chrysochraon deorum, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 262 (1876) [1].
Eremnus deorum, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 268, 269, t. 6. fig. 29 (1897) [2].
Ageneotettix deorum, McNeill, Psyche, viii. p. 71 (1897) [3].

Hab. North America, Mesilla Park, New Mexico (*Morse*).

Possibly the insect seen by me in Chihuahua, and referred to under *A. scudderi*, may have been *A. deorum*.

3. **Ageneotettix australis,** sp. n.

About the size of *A. scudderi*, from which it differs in its more robust form, the shorter tegmina and wings, and the fewer spines on the hind tibiæ.

Head large, a little broader than the front edge of the pronotum; the vertex of moderate width, shallowly sulcate, the sides meeting in an obtuse angle in front, the lateral foveolæ nearly twice as long as broad, their inner upper angle broadly rounded. Antennæ nearly (♀) or quite (♂) reaching the base of the hind femora. The latter much heavier and longer than in the species to which it has been compared.

General colour ferruginous-brown, more or less mottled with dark brown above, testaceous beneath. The hind femora provided with the usual markings above, and with their apices and the basal portion of the tibiæ almost wholly black; the latter scarcely showing any traces of the sub-basal pale annulus of the other species.

Length of body, ♂ 16, ♀ 21; of antennæ, ♂ 8, ♀ 10; of pronotum, ♂ 3, ♀ 3·4; of tegmina, ♂ 10, ♀ 12; of hind femora, ♂ 10, ♀ 13 millim.

Hab. North America, Phœnix, Arizona (*Kunze*).

While the specimens before the writer were taken in Arizona, there can be but little doubt that it also occurs in Mexico.

AULOCARA, Scudder.

Stauronotus, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, p. 82.
Œdocara, Scudd. Ann. Report U.S. Geol. Surv. West 100th Merid. p. 289 (1876).
Aulocara, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 266 (1876).
Coloradella, Brunn. Rev. Syst. Orthopt. p. 123 (1893).

This is still another genus of medium or rather small-sized locusts, the species of which live in arid regions. All the known forms have blue hind tibiæ, while those of *Ageneotettix* have these members red. The group is represented in Mexico by at least three species.

Table for separating the Species of Aulocara.

A[1]. Tegmina and wings fully as long as, or longer than, the abdomen in both sexes. The hind femora not especially robust or elongate. The sexes not very unequal in size	1. *elliotti,* Thom.
A[2]. Tegmina and wings decidedly shorter than the abdomen in both sexes. The hind femora rather elongate and robust. The sexes very unequal in size.	

b^1. Tegmina and wings more than one-half as long as the abdomen. The sides of the pronotum pale and generally provided with a large, dark central patch . . . . . 2. *femoratum*, Scudd.

b^2. Tegmina less than one-half the length of the abdomen; wings nearly or quite obsolete. Sides of pronotum less conspicuously marked . 3. *brevipenne*, sp. n.

1. **Aulocara elliotti**, Thomas.

Stauronotus elliotti, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, p. 82 (1870) [1].
Œdocara elliotti, Sauss. Prodr. Œdip. p. 79 (1884) [2].
Aulocara elliotti, Bruner, Canad. Ent. xvii. p. 10 (1885) [3].
Aulocara cæruleipes, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 266 (1876) [4].
Aulocara decens, Scudd. loc. cit. p. 267 (1876) [5].
Œdocara strangulatum, Scudd. Ann. Report U.S. Geol. Surv. West 100th Merid. p. 289 (1876) [6].

Hab. North America [1–6], Los Angeles and San Diego, California (*Bruner*).—Mexico, mountains twelve leagues east of San Luis (*Dr. Palmer*), Villa Lerdo in Durango (*Bruner*), Casas Grandes, Chihuahua (*Dr. Hughes*).

This is the most widely distributed species of the genus, and it is known to occur from the north branch of the Saskatchewan River in British America to the plains of Central Mexico, and from the Mississippi River to the Pacific Ocean. In many localities this insect and *A. femoratum* have frequently become sufficiently numerous to materially injure the grasses on the cattle-ranges.

2. **Aulocara femoratum**, Scudd.

Aulocara femoratum, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. pp. 55, 56 (1899) [1].
Aulocara decens, Bruner, Report Nebr. St. Bd. Agric. 1896, p. 129 (1897) (nec Scudder) [2].

Hab. North America, Phœnix, Arizona (*Kunze*).—Mexico, Jimulco and Lerdo, Durango (*Bruner*).

Although the present species is less widely distributed than the preceding, it is nevertheless a very common locust over much of the country lying west of the 100th Meridian and south of the northern boundary of the United States.

3. **Aulocara brevipenne**, sp. n.

Zapata brevipennis, Bruner, anteà, p. 103 (♂, nec ♀).

Very similar in general appearance to *A. femoratum*, Scudd., but much smaller and with more abbreviated tegmina. Head rather small, the face very oblique, and the fastigium provided with strong carinæ, which meet in front in an acute angle. As compared with *A. femoratum*, this form has the pronotum less constricted at the last transverse incision, and the median carina less conspicuous. In colour it seems to be more uniform greyish-brown, having none of the decided dark and light markings of *A. femoratum*.

Length of body, ♂, 12; of antennæ 8, of pronotum 2, of tegmina 3, of hind femora 8·25 millim.

Hab. Mexico, Comancho, Zacatecas (*Bruner*).

The present species is based on a single imperfect specimen which was taken early

one morning in November while the south-bound train on the Mexican Central Railroad was waiting on a siding. The female insect figured on Tab. I. under the name of *Aulocara brevipennis* belongs to the genus *Zapata*.

LIGUROTETTIX, McNeill.

Ligurotettix, McNeill, Proc. Dav. Acad. Nat. Sci. vi. pp. 257, 258 (1897).

This genus, which possesses characteristics of the Œdipodinæ and Acridiinæ, as well as of the Tryxalinæ, is not at all closely related to any of the preceding genera, but it seems to represent a distinct section of the subfamily. In its distribution, *Ligurotettix* is confined to the region bordering the international boundary-line between Mexico and the United States, where its two representatives are known to live among and upon scattered desert vegetation indigenous to the district. The insects are dull, almost uniform greyish-brown in colour, while the males are equipped with the most complete stridulating-apparatus to be found in the family. According to Mr. D. W. Coquillett, the music of *L. coquelletti* is as loud and sustained as that of some of the Cicadidæ. The two recognized forms may be separated thus:—

Table for separating the Species of Ligurotettix.

A¹. Larger (length, ♂ 17, ♀ 24 millim.), more slender . . . . . 2. *kunzei*, Caudell.
A². Smaller (length, ♂ 14–16, ♀ 18 millim.), more robust . . . . . 1. *coquilletti*, McNeill.

1. **Ligurotettix coquilletti**, McNeill.

Ligurotettix coquilletti, McNeill, Proc. Dav. Acad. Nat. Sct. vi. p. 258, t. 5. figg. 24, 24 *a–c* (1897) [1].

Hab. North America [1], Los Angeles County, California (*Coquillett*), Needles, California (*Wickham*), Yuma, Arizona (*Leon La Forge*).

The specimens from these localities are all in the collection of the present writer.

2. **Ligurotettix kunzei**, Caudell.

Ligurotettix kunzei, Caudell, Proc. Ent. Soc. Wash. v. p. 162 (1903) [1].

Hab. North America [1], Phœnix, Arizona (*Kunze*), Florence, Pinal County, Arizona (*Biederman*).

GONIATRON, gen. nov.*

The characters given in the footnote, together with those mentioned in the specific

* This genus seems to be most closely related to *Ligurotettix*, amongst the Mexican forms. The structure is peculiarly composite, showing some of the characteristics of all three subfamilies, the Œdopidinæ, Acridiinæ, and Tryxalinæ, but with the prevailing features approaching those of the latter. On account of the decidedly spined prosternum and the selliform pronotum, it was first thought by the writer to be an aberrant form belonging to the Acridiinæ. However, after a more careful study and some deliberation, it has been thought best to place it in the present position. This explanation will indicate why *Goniatron* was not

description which follows, will be amply sufficient to distinguish the present genus. It is confined in its distribution to the arid plains of Middle and Northern Mexico.

1. **Goniatron planum,** sp. n. (Tab. I. figg. 20, 20, *a*, *b*, ♂ *.)

Medium-sized; colour dark brownish-cinereous, but little variegated with lighter or darker markings. Head not greatly enlarged, the occiput short, considerably elevated above the level of the pronotum, the vertex between the eyes as wide as the shorter diameter of the latter, very gently sulcate and bounded on the sides and front by distinct though blunt carinæ, which meet anteriorly at a little less than a right angle; lateral foveolæ visible from above, elongate triangular, more than twice as long as their basal breadth; eyes about the length of the cheeks below them, rather prominent, their front edge nearly straight; frontal costa very wide, its sides a little contracted above, coarsely punctate and but gently sulcate in the vicinity of the ocellus; antennæ filiform, about as long as the hind femora. Pronotum selliform, the sides higher than long; the anterior lobe smooth, rounded above; the transverse sulci profound and continuous; posterior lobe roughened, the disc flat, the shoulders well-defined and the posterior edge slightly obtusangulate. Tegmina and wings ample, extending fully one-third of their length beyond the tip of the abdomen; the former rather heavily and profusely veined, the veins giving them a leathery appearance, the wings yellowish-hyaline on the basal half, becoming fuliginous apically, where not only the veins but also the cells are more or less smoky. Hind femora only moderately robust basally, slender apically, and not quite reaching the tip of the abdomen, which is acuminate. Hind tibiæ with eleven or twelve spines in the outer row. The abdomen differs from that of all other known forms in having the dorsal portion on each side of the centre flattened, these fields being separated from the sides by well-marked angles or ridges, the abdomen thus appearing tricarinate, hence the name *Goniatron*.

Length of body, ♂, 23; of antennæ 11·5, of pronotum 4·30, of tegmina 23, of hind femora 12 millim.

Hab. Mexico, Comacho, Zacatecas (*Bruner*).

The single specimen at hand, and which was obtained by the present writer in November, has the lower sulcus of both hind femora provided with a rather conspicuous transverse tooth or blunt spine, which is situated near the inner edge at a point about one-fourth the length of this joint from its base. I do not believe that this feature can be accidental, since two males of *Ligurotettix* also show the same feature, but in a much less degree.

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included in the synoptical table separating the genera of the Tryxalinæ (*anteà*, pp. 26–34). In order to include the present genus, it is only necessary to modify the last paragraph of that table so as to make it read as follows:—

bb. Tegmina with a distinct intercalary vein, which is slender and intermediate between the radial and ulnar veins.

c. Scapular area of ♂ tegmina greatly dilated, hyaline and regularly scalariform-veined. Abdomen unicarinate above. Hind tibiæ with ten spines in the outer row . . . . . Ligurotettix, McNeill.

cc. Scapular area of ♂ tegmina not greatly dilated, the cross-veining less regular, and this portion of the wing not greatly different from the remainder. Abdomen tricarinate above. Hind tibiæ with eleven or twelve spines in the outer row . . . . . Goniatron, Bruner.

* Incorrectly marked ♀ on the Plate.

Subfam. *ŒDIPODINÆ**.

Members of the present subfamily are usually characteristic of arid and semi-arid regions. Hence we may naturally expect to find the group well represented in portions of Middle and Northern Mexico. Although the collections studied are few and very incomplete so far as these particular regions are concerned, fully thirty genera and more than one hundred species are herewith included. Most of these have actually been taken or reported as occurring within the boundary. When there are exceptions to this statement they come so close to its borders as to make it certain that they belong to the region as well.

The majority of the species of Œdopodinæ as represented in Mexico and Central America belong to the three American genera *Arphia*, *Hippiscus*, and *Trimerotropis*, all of which have recently received monographic attention by American authors. The present treatise contains the descriptions of several additional forms. Future thorough work will without doubt result in adding others to the list.

Synopsis of the Genera.

A. Outer margin of the hind tibiæ without an apical spine just before the spurs. (Œdipodini.)

b. Interspace between the metasternal lobes linear, or at least distinctly longer than wide, in the male, narrower than the space between the mesosternal lobes in the female.

c. Tegmina somewhat leathery, densely and irregularly reticulate basally, at the apex more remotely and somewhat regularly so; the intercalary vein nearer the median than the ulnar vein; wings with the disc brightly coloured, red or yellow, none of the veins incrassate and no costal stigma present. . Arphia, Stål.

cc. Tegmina with nearly the whole apical half, at least in the discoidal field, membranaceous, traversed by straight veinlets;

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* Principal works referred to for this subfamily :—

Stål, C., Recensio Orthopt. i. pp. 113–119 (1873).

Stål, C., Observations Orthoptérologiques, ii. pp. 24–28, 43–47 (1873).

Saussure, Henri de, Prodromus Œdopodiorum Insectorum ex ordine Orthopterorum (1884).

Saussure, Henri de, Additamenta ad Prodromum Œdopodiorum Insectorum ex ordine Orthopterorum (1888).

Scudder, S. H., "The Orthopteran Genus *Hippiscus*," Psyche, 1892, pp. 265–274, 285–288, 301–304, 317–320, 333–336, 347–350, 359–363.

Scudder, S. H., 'Guide to the Genera and Classification of North-American Orthoptera.' Cambridge, 1897.

McNeill, Jerome, "Revision of the Orthopteran Genus *Trimerotropis*," Washington, 1901 (Proc. U.S. Nat. Mus. xxiii.), pp. 393–449.

the intercalary vein distant from the median vein; wings with dilute colouring, nebulous, the veins next the costal margin and frequently (in the male) the median vein also incrassate, the costa with a dusky stigma, the ulnar area dilated and with remotely scalariform venation.

d. The intercalary vein of the tegmina running midway between the median and the ulnar veins, only apically a little approximating the former; veins of the wings slightly or scarcely incrassate. . . . . CHORTOPHAGA, Sauss.

dd. The intercalary vein of the tegmina distinctly nearer the ulnar than the median vein; the veins of the wings referred to (under *cc*) distinctly incrassate in the male.

e. Antennæ very short, stout; head compressed, the fastigium prominent, angulate . . . . . CHIMAROCEPHALA, Scudd.

ee. Antennæ rather long and slender, head subtumid, rotundate, the fastigium in the female anteriorly obtuse . . ENCOPTOLOPHUS, Scudd.

bb. Interspace between the metasternal lobes rather broad, in the male quadrate, in the female transverse.

c. Lateral canthi of the metazona traversing the principal sulcus (where they are frequently cristulate or rugose), not intersected by it (or only in individual cases); principal sulcus more or less obsolete or shallow in the lateral lobes.

d. Median carina of the pronotum conspicuous, but not cristate. Tegmina moderately densely reticulate, the apical third at least remotely and quadrately reticulate.

e. Smaller forms. The pronotum not rugose. Wings subvitreous, not definitely coloured.

f. Posterior lateral angles of the pronotum acute. The carinæ and sulcation of the vertex continuous with those of the frontal costa . . . . . HIPPOPEDON, Sauss.

ff. Posterior lateral angles of the pronotum rounded. The sulcation of the vertex not continuous with that of the frontal costa. . . . . CAMNULLA, Scudd.

ee. Larger forms. The pronotum rugose. Wings decidedly coloured . . . . . HIPPISCUS, Sauss.

dd. Median carina of the pronotum very slight. The whole of the tegmina rather densely reticulate and coriaceous, membranaceous or subvitreous at the extreme tip only.

e. Less stout; mesosternum only a little broader than the head; tegmina extending well beyond the tip of the abdomen in both sexes, the intercalary vein distinct throughout and everywhere very much nearer the median than the ulnar vein; transverse fascia of wings without a subcostal tænia . . . . . LEPRUS, Sauss.

ee. Exceptionally stout (especially the female); the mesosternum fully half as broad again as the head; tegmina in female leaving the tip of the abdomen exposed, the intercalary vein more or less obscure proximally and only a little nearer the median than the ulnar vein; transverse fascia of wings with distinct subcostal tænia . . . . . AGYMNASTES, Scudd.

cc. Lateral canthi of the metazona typically intersected by the principal sulcus, often vanishing anterior to it; principal sulcus distinctly developed on the lateral lobe.

d. Pronotal carina entire or intersected by but one sulcus.

e. Pronotum with a very high foliaceous crest . . . . . TROPIDOLOPHUS, Thomas.

ee. Pronotum crested or carinate, but not strongly so.

f. Body slender, compressed; lateral foveolæ of the vertex trigonal, short.

g. The whole of the apical third of the tegmina, even next the costal margin, membranaceous.

h. The intercalary vein of the tegmina very distinct, retro-arcuate, rather remote from the median vein, nearly intermediate between it and the ulnar vein, the anterior intercalary area, therefore, rather broad; wings conspicuously marked, but not banded . . . . . DISSOSTEIRA, Scudd.

hh. The intercalary vein of the tegmina more or less distinct, hardly arcuate, nearer the median than the ulnar vein, the anterior intercalary area, therefore, narrow, densely coriaceous; wings with a fuscous arcuate median band.

i. Tegmina rather broad, the intercalary vein more or less flexuous; pronotal crest anteriorly elevated, profoundly intersected, arcuate on the metazona as seen laterally . . . . . SPHARAGEMON, Scudd.

ii. Tegmina very narrow, the intercalary vein straight, subobsolete; pronotal crest low, straight as seen laterally, not deeply intersected . . . . SCIRTETTICA, Sauss.

gg. The apical membranaceous portion of the tegmina oblique, the costal margin coriaceous.

h. Head normal, the summit without carination, fastigium of vertex oval, rather deeply impressed, completely margined with elevated walls . . . MICROTES, Scudd.

hh. Head rugose, the summit carinated, the fastigium truncate at the apex, open, the occiput more or less grooved and ridged . . . . . LACTISTA, Scudd.

ff. Body rather stout; lateral foveolæ of head lanceolate . TOMONOTUS, Sauss.

dd. Pronotum or pronotal carina twice intersected by transverse sulci.

e. Pronotal carina percurrent, not obliterated between the sulci.

f. Pronotum cristate anteriorly; tegmina generally membranaceous over most of the apical half.

g. Lateral lobes of the pronotum posteriorly rectangulate or obtuse-angulate, the posterior margin descending obliquely forward, their metazonal portion posterior to the typical sulcus, thereby narrowed inferiorly; prozona posteriorly scutellate on the disc; vertex of the head with a transverse carinula on either side next to the eyes . . . . . DEROTMEMA, Scudd.

gg. Posterior portion of the lateral lobes of the pronotum of equal width throughout.

h. Inferior margin of the lateral lobes oblique, the posterior angle thereby acute or posteriorly produced.

i. Lateral canthi of the metazona terminating at the principal sulcus or, if continued, it is in a different course; prozona posteriorly scutellate on the disc; inferior margin of the lateral lobes straight, the posterior concave; tegmina fasciate or maculate; head tumid; the frontal costa moderately constricted . . . . . MESTOBREGMA, Scudd.

ii. Lateral canthi of the metazona acute, passing in the same course beyond the principal sulcus.

j. Disc of the prozona not posteriorly scutellate; inferior margin of the lateral lobes straight or arcuate, the posterior concave, the angle slightly produced posteriorly; frontal costa of the head very strongly compressed; basal half of the tegmina densely coriaceous . . PSINIDIA, Stål.

jj. Disc of the prozona more or less distinctly scutellate posteriorly; lower margin of the lateral lobes straight and oblique, the posterior margin nearly straight, the angle produced inferiorly; head narrow, its frontal costa moderately constricted; tegmina densely reticulate, fasciate on the costal margin, the distal third only membranaceous . . . . CONOZOA, Sauss.

hh. Inferior margin of the lateral lobes horizontal, but anteriorly oblique, the posterior angle rounded-rectangulate; disc of the prozona not or scarcely

scutellate posteriorly, the distal third of the tegmina membranaceous.

i. Radiate veins of the anal field of the wings normal . . . . . TRIMEROTROPIS, Stål.

ii. Radiate veins of the anal field of the wings distinctly incrassate . . . . . CIRCOTETTIX, Scudd.

ff. Pronotum delicately carinulate; tegmina densely coriaceo-reticulate, the distal fourth only membranaceous. HADROTETTIX, Scudd.

ee. Pronotal carina obliterated between the sulci. The tegmina with at least the basal third coriaceous and closely reticulate.

f. Body slender; the tegmina either with or without an intercalary vein.

g. The tegmina provided with a well-defined intercalary vein. Body compressed or cylindrical; the hind tibiæ 10-spined in outer row. Pronotum gently strangulate.

h. Wings generally without the dusky band characteristic of this subfamily. Hind femora slender.

i. Tegmina very long and narrow, more than twice as long as the hind femora. Hind wings roseate basally, and sometimes furnished with a well-defined dusky band. Eyes prominent, nearly globular . . . . . TREPIDULUS, McNeill.

ii. Tegmina broader, less than twice as long as the hind femora. Hind wings hyaline or pale blue-tinted throughout. Eyes decidedly elliptical . ANCONIA, Scudd.

hh. Wings always furnished with a fuliginous band. Hind femora moderately robust, shorter than the abdomen . . . . . SPHINGONOTUS, Fieb.

gg. The tegmina without an intercalary vein. Body depressed; the hind tibiæ 8-spined in outer row. Pronotum greatly strangulate . . . . . RAMONA, gen. nov.

ff. Body more robust; the tegmina without the intercalary vein.

h. Hind tibiæ of the ordinary form. General colour grey or brown. [Habitat, arid regions.] . . . HELIASTUS, Sauss.

hh. Hind tibiæ expanded apically, the outer margins acute. General colour green. [Habitat, swampy places in tropics.] . . . . . CŒLOPTERNA, Stål.

AA. Outer margin of the hind tibiæ provided with an apical spine next the spurs. (EREMOBIINI.)

b. Body stout, but subcylindric, more compressed than depressed, normal or subnormal; hind femora normally elongate, more

than half as long as the body, above smooth, simply carinate.

c. Interocular space more than twice the breadth of the eyes as seen from above; pronotum rather gently narrowing from behind forward, sharply carinate, posteriorly truncate or roundly angulate, the lateral lobes rapidly and greatly narrowing inferiorly; tegmina lobiform, lateral; wings rudimentary; hind legs excessively stout, the femora scarcely compressed, arolia very large . . . . . BRACHYSTOLA, Scudd.

cc. Interocular space narrower than the width of the eyes as seen from above; pronotum rapidly narrowing from behind forward, fully carinulate, with blunt lateral rugæ, the lateral lobes subequal in width throughout; tegmina and wings fully developed; hind legs normal, arolia minute . . . . TYTTHOTYLE, Scudd.

bb. Body gross, short, subfusiform, more depressed than compressed; hind femora exceptionally broad and only half as long as the body, compressed, above tuberculate and laminato-carinate . . { HALDEMANELLA, Sauss. / PHRYNOTETTIX, Uhler.

ARPHIA, Stål.

Œdipoda, Latr. (in part.).
Tomonotus, Sauss. (in part.), Rev. et Mag. Zool. xiii. p. 319 (1861).
Arphia, Stål, Recens. Orthopt. i. p. 113 (1873).

The genus *Arphia* is confined to North America, where some of its representatives may be found in almost every region. It is not surprising therefore that upwards of two dozen species have been characterized already, and still others are now added. While a few of the forms occur in districts widely removed from the country covered by the present work, the majority of the known representatives of the genus must be regarded as belonging to the Mexican or Central-American fauna. Since no attempt has hitherto been made at monographing the group, it is thought best to give the space for such a treatment of the genus here. It is but natural that some of the species belonging to a genus like the present, with such a multitude of forms, should be very closely related. Hence their differences are sometimes difficult to satisfactorily indicate or describe in a brief synoptic table like the following.

Table for separating the Species of Arphia.

A. Frontal costa with its sides subparallel, not sulcate, punctate or subcarinate, or above bifoveolate, broadly truncate at the vertex or continuous with the scutellum of the vertex. Median carina of the pronotum variable.

b. Pronotal crest greatly elevated, arcuate, not or faintly intersected by the principal sulcus. Pronotum strongly angulate in front,

acute-angled behind. Tænia or basally directed part of the fuscous area of the wings short.

c. Lateral foveolæ of the vertex elongate-triangular. Pronotum finely granulate, the dorsal impressions obsolete, the crest strongly arcuate.

d. Frontal costa without a carina, plane. Pronotum arcuately cristate. Wings yellow-orange basally, widely dusky-banded . . . . . [1. *carinata,* Scudd.]

dd. Frontal costa carinate above. Pronotal crest straight in front, arcuate behind. Wings with the disc brick-red, or variable, very broadly black-banded . . . . . 2. *crepusculum,* Sauss.

cc. Lateral foveolæ of the vertex four-sided. Pronotum rugose, the dorsal impressions more distinct and the crest less arcuate.

d. Lateral foveolæ smaller, with their apices obliquely truncate or arcuately acuminate. (United States east of the Mississippi River.) . . . . . [3. *xanthoptera,* Germ.]

dd. Lateral foveolæ usually large, fully as high as long, the inner upper angle rounded. (N. Mexico.) . . . . . 4. *difficilis,* sp. n.

bb. Pronotal crest less strongly elevated, straight or nearly so. Pronotum obtuse, or only gently angulate in front. Tænia of the wings more elongated.

c. Median carina of pronotum not severed by the principal sulcus. (Florida.) . . . . . [5. *granulata,* Sauss.]

cc. Median carina of the pronotum severed by the principal sulcus.

d. Disc of the wings yellow or orange.

e. Posterior edge of the pronotal disc (at least in the ♀) obtuse-angled. Disc of the wings dull brownish-yellow, the tænia very broad and occupying nearly the whole of the anterior field . . . . . 6. *fallax,* Sauss.

ee. Posterior edge of the pronotal disc acute-angled in both sexes. Disc of wings orange, the tænia much narrower.

f. Fuliginous band of the wings narrow, not quite reaching the front edge and only slightly produced towards the anal angle . . . . . 7. *truculenta,* Rehn.

ff. Fuliginous band of the wings rather broad, reaching the anterior edge and following well towards the anal angle . . . . . 8. *aurantipennis,* sp. n.

dd. Disc of the wings vermilion or carmine.

e. Size small: body rather slender . . . . . [9. *saussureana,* Bruner.]

ee. Size larger: body usually somewhat robust.

f. Wing-bands rather narrow, not extending more than halfway along the outer border towards the anal angle.

g. Tegmina and wings rather narrow and somewhat abbreviated (at least in the ♀), the apex of the wings hyaline . . . . . 10. *imperfecta*, sp. n.

gg. Tegmina and wings broader, of normal length in both sexes, the apices of the wings somewhat fuliginous.

h. Smaller: the median carina of the pronotum nearly straight; coloured area of the anterior field of the wing rather narrow . . . . . 11. *nietana*, Sauss., ♀.

hh. Larger: median carina of the pronotum decidedly arched; coloured area of the anterior field of the wing rather broad . . . . . 12. *calida*, sp. n.

ff. Wing-bands very broad, reaching the anal angle.

g. Apex of wings entirely hyaline, but with the nervures black; tænia separated from the anterior border by a rather narrow coloured field, which reaches apically nearly two-thirds the length of the wing . 13. *ovaticeps*, Sauss.

gg. Apex of the wings entirely black, or nearly so; the tænia separated from the anterior border by a much broader coloured field, which reaches about three-fourths the length of the wing.

h. More slender, and with the pronotum smoother. General colour of the insect paler; the fuscous band of the wing occupying the apical third, a little paler apically even in the males. (High altitudes and northward.) . . . . . 14. *pseudonietana*, Thom.

hh. More robust, the pronotum strongly rugose. General colour of the insect darker; the fuscous wing-band occupying fully the apical two-fifths, of uniform colour throughout, and following around to the anal angle. (South-west United States and southward.) . . . . . 15. *crassa*, sp. n.

AA. Frontal costa narrowed above to one-half or less than its width below the ocellus, sulcate and sometimes carinate above; median carina of the pronotum generally straight, or nearly so, not greatly elevated.

b. Frontal costa truncate at the vertex.

c. Wing-band incomplete, not attaining the costal margin.

d. Body unusually deep at the thorax; the pronotum rather long, finely rugose, the median carina moderately elevated, gently arched; hind femora robust . . . . 16. *conspersa*, Scudd.

dd. Body more slender; pronotum shorter, the rugæ usually coarser, and the median carina much less elevated, very rarely arched; hind femora less robust.

e. Disc of the wings yellow or yellowish; the dusky bands inconspicuous.

f. Smaller: the body short and compact; tegmina and wings rather short; the former only sparsely mottled and with the dorsal edge pale, the latter with the disc pale yellow and the apex clouded . . 17. *townsendi,* sp. n.

ff. Larger: the body more elongate and not so stout; tegmina and wings longer, the former profusely mottled and with the dorsal edge concolorous, the latter with greenish-yellow disc and hyaline apex . [18. *aberrans,* sp. n.]

ee. Disc of the wings generally reddish (sometimes yellow); the dusky bands nearly always conspicuous.

f. Apex of the wings, especially in the ♂, more or less strongly suffused with fuscous, the disc scarlet or vermilion; hind tibiæ darker, inclining to dark brown in the ♀ . . . . . [19. *canora,* Rehn.]

ff. Apex of the wings hyaline in both sexes, the disc yellow or brick-red; hind tibiæ paler, usually greenish-yellow or bluish.

g. Coloured costal margin of the wings narrower, the disc either opaque yellow or pale brick-red; tegmina noticeably shorter; hind femora dimly banded . . . . . [20. *arcta,* Scudd.]

gg. Coloured costal margin of the wings broader, the disc transparent brick-red; tegmina longer; hind femora very plainly fasciate.

h. Dusky wing-bands rather conspicuous; pronotum and head varied with lighter and darker shades; hind tibiæ blue . . . . . [21. *pulchripennis,* sp. n.]

hh. Dusky wing-bands inconspicuous; pronotum and head unicolorous; hind tibiæ greenish . . . [22. *teporata,* Scudd.]

cc. Wing-band complete, attaining the costal margin.

d. Disc of the wing very pale yellow, almost hyaline, the fuscous band also dull and inconspicuous, the apex not separated from the band by a hyaline field . . . . . 23. *pallidipennis,* sp. n.

dd. Disc of the wings bright yellow, orange, or red, the fuscous band conspicuous, the dusky apex usually separated from the band by a hyaline field.

e. Disc of the wings yellow or orange, the dusky apex separated from the fuliginous band by a hyaline field.

f. Size large: the wing-band of unequal width, on the anterior field narrower; tænia narrow and reaching about halfway to base . . . . . 24. *luteola,* Scudd.

ff. Smaller: the wing-band rather broad and of equal width throughout; tænia broader and extending two-thirds of the distance towards the base.

g. Disc of the wing straw- or clay-yellow. Size smaller: pronotum moderately rugose. (Mexico southward.) . . . . . 25. *decepta,* sp. n.

gg. Disc of the wing lemon-yellow. Size larger: pronotum less strongly rugose, sometimes nearly smooth. (Texas and northward.) . . . . . 26. *simplex,* Scudd.

ee. Disc of the wing yellowish-orange or vermilion, the apex fuscous, with or without a præapical paler area.

f. Wings with the disc yellowish-orange, the apex infuscated; face somewhat sloping. (Texas.) . . . [27. *infernalis,* Sauss.]

ff. Wings with the disc vermilion, the apex sometimes with an ante-apical pale band. Face vertical. (Mexico southward.) . . . . . 11. *nietana,* Sauss., ♂.

bb. Frontal costa convergent above, acuminate at the vertex.

c. Larger: tegmina and wings long, the latter with the disc orange-ochraceous . . . . . 28. *ramona,* Rehn.

cc. Smaller: tegmina and wings more abbreviated, the latter generally yellow.

d. Wings with the coloured area of the costal field rather broad; the tænia narrow; dusky band rather narrow, and slightly interrupted at the veins, pale orange or chrome-yellow . . . . . [29. *koebelei,* sp. n.]

dd. Wings with the coloured area of the costal field usually much narrowed, sometimes almost wanting; the dusky band more conspicuous.

e. Foveolæ of the vertex longer than wide, even in the ♀; the two sexes very unequal in size. (California and northward.)

f. Smaller: the pronotum not noticeably broadening behind; dorsal edges of the tegmina usually pale-coloured, even in the ♀; apex of wings subhyaline. [30. *frigida,* Scudd.]

ff. Larger: the pronotum conspicuously widening behind; dorsal edge of the tegmina not light-coloured, even in the ♂; apex of wings fuliginous . . . . 31. *behrensi,* Sauss.

ee. Foveolæ of the vertex broader than long, even in the ♂. The two sexes not very unequal in size. (Northward and eastward.) . . . . . [32. *sulphurea,* Fabr.]

[1. **Arphia carinata,** Scudd.

Œdipoda carinata, Scudd. Trans. Amer. Ent. Soc. ii. p. 306 (1869) [1].

Tomonotus carinatus, Thomas, N. Amer. Acrid. p. 106 (1873) [2].

Arphia carinata, Uhler, Bull. U.S. Geol. Surv. Terr. iii. p. 794 (1877) [3]; Sauss. Prodr. Œdip. p. 67 (1884) [4].

Hab. NORTH AMERICA [1–3], Western Mississippi valley, from Texas northward to British America.

A. carinata is perhaps entirely absent from Central America, though it may reach the regions bordering the Rio Grande.]

2. **Arphia crepusculum,** Sauss.

Arphia crepusculum, Sauss. Prodr. Œdip. p. 67 (1884) [1]; Scudd. Cat. Orthopt. U.S. p. 30 (1900) [2].

Hab. NORTH AMERICA [1 2], Texas and Eastern Nebraska (*L. Bruner*).

This insect does not differ greatly from the preceding and most certainly occurs along the Gulf Coast beyond the Rio Grande, in Eastern Mexico.

[3. **Arphia xanthoptera,** Germ.

Œdipoda xanthoptera, Germ. in Burm. Handb. Ent. ii. p. 643 (1838) [1]; Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 469 (1862) [2].

Acridium (*Œdipoda*) *xanthopterum,* de Haan, Bijdr. Kenn. Orthopt. p. 143 (1842) [3].

Tomonotus xanthopterus, Thomas, Acrid. N. Amer. p. 105 (1873) [4].

Tomonotus sulphureus xanthopterus, Thomas, Acrid. p. 107 (1880) [5].

Arphia xanthoptera, Scudd. in Hitch. Rep. Geol. N. H. i. p. 377 (1874) [6]; Sauss. Prodr. Œdip. p. 67 (1884) [7].

Hab. NORTH AMERICA [1–7], east of the great Plains, except into the southern districts.]

4. **Arphia difficilis,** sp. n.

A dark brown, medium-sized, yellow-winged insect, with moderately high, plainly notched median carina of the pronotum, in which the lateral foveolæ of the vertex are unusually large and quadrate. It is most nearly related to *A. xanthoptera,* as indicated in the synoptic table, but has the dorsal edge of the tegmina pale, instead of concolorous.

Head and thorax moderately rugose, the frontal costa wide and coarsely punctate above the ocellus, at the upper extremity a little narrowed and bifoveolate; foveola of vertex broadly subpyriform, and without a median longitudinal carina, except in front and behind, where it is barely visible. Pronotum considerably contracted anteriorly; the disc flattened on the hind lobe, slightly tectate on the anterior lobe; median carina evenly arched, plainly cut a little in advance of its middle by the last transverse sulcus; anterior extremity distinctly angulate, the posterior edge slightly acute. Tegmina extending considerably beyond the tip of the hind femora. Wings of only moderate width, the apex and dusky bands fuliginous, the tænia occupying two rows of cells at its base and reaching about halfway to the base of the wing; disc and anterior field ochraceous, the extreme front edge narrowly so to the apex. Hind tibiæ very dark brown, almost black, without pale basal annulus.

Length of body, ♂, 21; of antennæ 7, of pronotum 6, of tegmina 24, of hind femora 13·5 millim.

Hab. MEXICO, Ciudad in Durango 8100 feet (*Forrer*).

The single specimen at hand, a male, is labelled *A. luteola*, Scudd., in Saussure's handwriting.

[5. **Arphia granulata,** Sauss.

Arphia granulata, Sauss. Prodr. Œdip. p. 67 (1884) [1].

Hab. NORTH AMERICA [1], Florida and Gulf States east of the Mississippi River (*coll. L. Bruner*).

A good species and differing from the preceding in several respects, as shown in the synoptic table.]

6. **Arphia fallax,** Sauss.

Arphia fallax, Sauss. Prodr. Œdip. p. 69 (1884) [1].

Hab. MEXICO, Ciudad in Durango (*Forrer*: ♀); GUATEMALA (*Saussure* [1]).

The collection before me contains a single female labelled by Dr. Saussure, which, while not the type, no doubt belongs to this species. It agrees well with the description and differs from all other known forms.

7. **Arphia truculenta,** Rehn.

Arphia truculenta, Rehn, Proc. Acad. Nat. Sci. Phil. 1904, p. 522 [1].

Hab. MEXICO [1] (*coll. U.S. Nat. Mus.*: ♀), Guadalajara in Jalisco (*coll. Acad. Nat. Sci. Phil.*: ♂).

This plainly-marked species seems to belong to Central Mexico, and but little is at present known of its distribution. Three males and two females have been found.

8. **Arphia aurantipennis,** sp. n.

A medium-sized, rusty-brown insect, with orange-red or orange-yellow wings, and the tegmina, pronotum, and hind femora more or less irrorated and streaked with darker brown and dull black specks and markings.

Head and thorax unusually coarsely granulated, the pronotum with traces of elongate ridges on the posterior portion of the disc. Vertex with a large, rather deeply grooved, nearly circular, sulcation of the foveola, through the centre of which runs a well-defined carina (♂), or very broadly pyriform and with a fainter median carina (♀); lateral foveolæ subquadrate, of medium size, the upper inner edge rounded; frontal costa very coarsely punctate above the ocellus and deeply bifoveolate at its upper extremity, where it is only slightly narrowed. Antennæ rather short and slender. Pronotum with the sides compressed, the front but little narrowed; median carina rather prominent, nearly straight, and strongly notched by the last sulcus plainly in advance of its middle; anterior margin scarcely angulate, the hind border somewhat acute, even in the ♀, in the ♂ decidedly so, the extreme tip rounded. Tegmina and wings normal, the former profusely and evenly irrorated with darker brown, the latter with moderately heavy fuliginous bands and apices of the same colour, the dusky apex preceded by faint indications of a præapical vitreous patch. Tænia broad and extending nearly to the base of the wings; coloured area of the anterior field narrow, the extreme margin largely dark. Hind femora somewhat robust, and showing a rather broad

præapical pale annulus; hind tibiæ with a pale sub-basal annulus, in the ♀ fuscous, in the ♂ with a dark plumbeous tinge, at least mesially.

Length of body, ♂ 21, ♀ 25; of antennæ, ♂ & ♀, 7; of pronotum, ♂ 5, ♀ 6·75; of tegmina, ♂ 20, ♀ 24·5; of hind femora, ♂ 14, ♀ 16 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

This seems to be a very well-marked species and is certainly quite distinct from any other form with which the writer is acquainted. Four specimens, taken in August. The single female at hand shows lighter bands on the sides of the disc of the pronotum and on the head.

[9. **Arphia saussureana,** Bruner.

Arphia saussureana, Bruner, Proc. U.S. Nat. Mus. xii. p. 63 (1890) [1].

Hab. NORTH AMERICA [1], Central California (*L. Bruner*).

This is the smallest species of the genus and it seems to be very local in its distribution, being confined to the hilly regions to the southward of San Francisco.]

10. **Arphia imperfecta,** sp. n.

A medium-sized, moderately robust insect, with rather coarsely granulate or rugate head and thorax, and slightly abbreviated tegmina and wings. Apparently quite closely related to, and perhaps only a variety of, *A. nietana*, Sauss., but differing from that species in the features indicated in the synoptic table.

Head large, high, and evenly broadening below; frontal costa rather prominent, but with the bounding walls blunt, coarsely punctate and shallowly sulcate below the ocellus; foveola of vertex inconspicuous, pyriform, shallow, and provided with a well-defined median carina; the lateral foveolæ of medium size, quadrate, narrowed toward the inner edge. Pronotum short, broad, and only gently widening posteriorly; the median carina distinct, not greatly elevated, cut behind the middle by the posterior sulcus; front edge nearly straight, the hind edge of the disc obtuse-angled. Tegmina and wings slightly surpassing the hind femora, and about reaching the tip of the abdomen, rather profusely and coarsely irrorate with darker markings. Wings cinnabar-red, with a narrow fuscous band that terminates on the posterior border halfway to the anal angle; tænia broad, evenly tapering, and reaching nearly to the base; costal field narrowly red nearly to the tip of the wing; apex vitreous, the veins only dusky. Hind femora moderately robust, nearly reaching the tip of the abdomen; hind tibiæ brownish-testaceous, a little paler near their base.

Length of body, ♀, 27; of antennæ 7, of pronotum 5·25, of tegmina 21, of hind femora 14 millim.

Hab. MEXICO, Tlalpam (*L. Bruner*).

The present form is represented by a single female specimen, taken in November. Whether it is anything more than a variety of *A. nietana* is at present uncertain, since we do not know how much that species may vary.

11. **Arphia nietana,** Sauss.

Tomonotus nietanus, Sauss. Rev. et Mag. Zool. (2) xiii. p. 321 (1861) [1]; Thomas, Acrid. N. Amer. p. 212 (1873) [2].

Arphia nietana, Sauss. Prodr. Œdip. p. 70 (1884) [3]; Rehn, Trans. Amer. Ent. Soc. xxvii. p. 96 (1900) [4].

Hab. MEXICO [1], Cordova (*Saussure*), Eslava (*O. W. Barrett*), Tlalpam (*L. Bruner*: ♂), Coatzacoalcos (*C. C. Deam*: ♀).

There seems to be some little doubt as to the definite determination of several of the above specimens, since they show the apices of the wings more vitreous than Saussure's description would lead us to believe them to be. As will be seen by a reference to the above synoptic table, the two sexes fall into distinct sections. (See also the remarks under the preceding species.)

12. **Arphia calida,** sp. n.

A rather large and robust species, of dark colour, with the median carina of the somewhat tectate pronotum decidedly arcuate, but not greatly elevated. This insect, on account of its bright vermilion wings, at once reminds one of *A. pseudonietana*, Thom., from which it differs in the much narrower and greatly abbreviated wing-band, and in the more decidedly arched pronotal carina. The female of *A. calida* is also much more robust, with broader hind femora, as well as being much more strongly granulose on the head and pronotum. In these latter respects *A. calida* approaches *A. conspersa*. I also occasionally has the dorsal edges of its sparsely mottled tegmina pale testaceous, as in several other species of the genus.

Length of the body, ♂ 22, ♀ 31; of antennæ, ♂ 7, ♀ 8; of pronotum, ♂ 6, ♀ 8; of tegmina, ♂ 23, ♀ 29; of hind femora, ♂ 14, ♀ 17 millim.

Hab. MEXICO, Zacatecas (*L. Bruner*).

The specimens described were found in November.

13. **Arphia ovaticeps,** Sauss.

Arphia tenebrosa, Sauss. Prodr. Œdip. pp. 68, 69 (1884) (nec Scudder) [1].
Arphia ovaticeps, Sauss. Addit. Prodr. Œdip. pp. 165, 166 (1888) [2].

Hab. ? NORTH AMERICA, Colorado [1 2].—MEXICO, Jalisco (*Schumann*: ♀).

The collection sent to me contains three specimens of this species, females, one of which bears Saussure's label. While these insects are not at all like any form that occurs in Colorado, they seem to agree well with the description of *A. ovaticeps*. This inclines the writer to the belief that possibly Saussure erred in assigning his species to Colorado, instead of to Mexico. The hind tibiæ of these specimens are dark plumbeous, with a paler basal annulus, while in *A. pseudonietana* and *A. crassa* they are brownish or blackish.

14. **Arphia pseudonietana,** Thomas.

Tomonotus pseudonietanus, Thomas, Proc. Acad. Nat. Sci. Phil. 1870, p. 82 (1870) [1].
Tomonotus mexicanus, Thomas (nec Sauss.), loc. cit. p. 82 [2].
Œdipoda tenebrosa, Scudd. Rep. U.S. Geol. Surv. Nebr. p. 251 (1871) [3].
Arphia tenebrosa, Scudd. Daws. Rep. 40th Par. p. 344 (1875) [4].
Arphia sanguinaria, Stål, Recens. Orthopt. i. p. 119 (1873) [5].

Hab. NORTH AMERICA [1–5], from the Mexican boundary to Northern Michigan and the

Saskatchewan, most abundant northward on the high prairies.—Mexico, Durango (*O. W. Barrett*: ♂ ♀).

As indicated in the table, the apices of the wings are less deeply fuliginous than in the next species, but much less vitreous than they are in the insect which is here referred to *A. ovaticeps*.

15. **Arphia crassa,** sp. n.

A large, coarse, heavy-bodied, dark brown insect, with bright vermilion wings, which are very broadly bordered externally with black, the tegmina profusely and rather evenly sprinkled with irregular dusky spots.

Head somewhat broader than the front edge of the pronotum, decidedly oval in form, the lower portion having a rather swollen or bloated appearance, due to the carinæ fading away before reaching the clypeus; vertex deflected and evenly rounded, its scutellum broadly pyriform, with a prominent longitudinal carina and bounding walls; lateral foveolæ of medium size, elongate-quadrate, the upper inner angle broadly rounded; frontal costa broad and shallowly sulcate, the margins coarse and fading away below the ocellus, above longitudinally carinate in the middle, and at the upper extremity faintly bifoveolate. Pronotum rather deep, the sides compressed, the disc somewhat rugose, the carina of medium height, the two sections separately arched; anterior edge slightly angulate, the hind margin right-angled. Tegmina broad, extending one-fifth (♀) or one-third (♂) of their length beyond the tip of the abdomen. Wings with the dusky band very broad, occupying fully half their extent in the ♂ and nearly as much in the ♀, the apex entirely dark. Hind femora broad, their inner face and lower sulcus black, save for a faint, narrow, præapical annulus and two small irregularly shaped pale spots along the upper edge. Hind tibiæ very dark brown (♀) or glossy black (♂).

Length of body, ♂ 24, ♀ 36; of pronotum, ♂ 6, ♀ 9; of tegmina, ♂ 26·5, ♀ 31·5; of hind femora, ♂ 14, ♀ 19 millim.

Hab. North America, Southern Arizona (*J. G. Lemmon*), Silver City, New Mexico (*Grant*).—Mexico, Northern Sonora or Chihuahua (*coll. U.S. Dept. Agr.*).

This species seems to be most nearly related to *A. pseudonietana*, differing from that insect in its much larger size and coarser form, and in having the two portions of the median carina of the pronotum separately arched. The black border of the wings is also much more extended in *A. crassa* than it is in *A. pseudonietana*. Another form, perhaps specifically distinct, is to be met with in abundance in portions of the mountain regions of central Chihuahua, where specimens were taken by Mr. C. H. T. Townsend; this insect has the dusky wing-band partially interrupted and in some instances somewhat abbreviated on the posterior margin towards the anal angle, while the hind margin of the disc of the pronotum is somewhat acute-angled. Otherwise the differences are scarcely sufficient to warrant its separation under a distinct name.

16. **Arphia conspersa,** Scudd.

Arphia conspersa, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 514 (1875)[1]; Sauss. Prodr. Œdip. p. 70 (1884)[2].

Hab. North America[1 2], South-western Texas (*coll. L. Bruner*), Iowa, Nebraska, &c. (*L. Bruner*).

As suggested by Saussure (*loc. cit.*), this *Arphia* is rather variable in wing-coloration, since specimens occur with the disc of these organs yellow, ochraceous, orange, or even brick-red or rose-tinted. It is most certainly found also across the Rio Grande in portions of Coahuila and Nuevo Leon, where the surface configuration and climatic conditions are very similar to those in the locality of its greatest abundance in Texas.

17. **Arphia townsendi,** sp. n.

So far as indicated by male specimens alone, the present species is rather small and more than usually robust. The wings have the disc pale yellow, the dusky band fairly broad, but pale and inconspicuous, not quite attaining the anterior border and interrupted by the anal and radial veins. Head of moderate size, the frontal costa prominent, with strong lateral carinæ, deeply and broadly sulcate throughout, and provided above the ocellus with a well-defined longitudinal carina; scutellum of the vertex variable, in some specimens pyriform, in others oval and with or without a well-defined median carina, only gently depressed anteriorly; lateral foveolæ elongate-triangular, the bounding-walls strong; occiput coarsely rugose and irregularly pitted. The pronotum is provided with well-defined lateral carinæ, which are more or less broken anteriorly, the disc sparsely rugose anterior to the principal sulcus and with a few coarse granules on the hind lobes; the median carina strong, the anterior section highest and arched; anterior edge somewhat angulate, behind slightly acute. Tegmina and wings rather narrow, the former sparsely sprinkled with irregular, small, dark brown spots, and with pale dorsal edges. The tænia broad and nearly reaching the base of the wing. Hind femora very broad.

General colour above pale greyish-brown, somewhat variegated with darker markings, abdomen and pectus pale testaceous. Tegmina and wings as described above. Hind femora more or less plainly barred obliquely with dusky on their outer face; internally and below tinged with bluish and crossed by transverse black bands, the pale præapical band rather broad. Hind tibiæ deep blue on their outer two-thirds, pale at the base.

Length of body, ♂, 17–19; of antennæ 8, of pronotum 4·5–5·2, of tegmina 17–18, of hind femora 11·5 millim.

Hab. NORTH AMERICA, San Francisco Mts., Arizona (*A. B. Cordley*).—MEXICO, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

The present species is rather an aberrant one, being of a distinct type, on account of the strongly angled shoulders of the pronotum and the prominent cephalic carinæ. The specimens described are all in the collection of the writer. Five were taken in Chihuahua.

[18. **Arphia aberrans,** sp. n.

A rather slender, long-winged, greyish-brown, profusely mottled insect, with greenish-yellow wings and rather conspicuously banded hind femora.

Head of moderate size, about twice as wide as the front edge of the pronotum; the vertex gently depressed, its scutellum shallowly sulcate, oval (♂) or pyriform (♀), the bounding-walls fairly prominent, but not high; lateral foveolæ triangular, inconspicuous, rather flat and more or less filled with rugosities or coarse granules; frontal costa plane, scarcely sulcate, narrowing above to a little less than its width at the ocellus and gradually merging into the sulcation of the vertex. Antennæ filiform, of moderate length. Pronotum a little constricted in advance of the principal sulcus, the disc moderately coarsely granulate; median carina fairly prominent, straight, cut in advance of the middle; anterior margin a little angulate, the hind margin right-angled. Tegmina of medium width, extending considerably beyond the tip of the abdomen in both sexes, the intercalary vein not especially prominent. Hind femora neither very heavy nor especially slender—about normal for insects of this group.

General colour above light greyish-brown, profusely and rather evenly mottled and streaked with dark brown and dull black; below pale testaceous, the dorsum of the abdomen bluish-tinged. Dorsum of the prothorax obscurely decussate with paler, the sides and the head back of the eyes longitudinally streaked alternately with darker and paler dashes of brown and grey. Tegmina with the dorsal edge paler and nearly destitute of the otherwise rather general dusky markings. Wings transparent greenish-yellow on the disc and along the anterior field nearly to the apex, the latter portion vitreous; the fuliginous band rather broad, but pale, and broken by the radial veins, not quite reaching the anterior edge; tænia quite prominent and reaching nearly to the base. Hind femora thrice obliquely banded with fuscous, internally black, banded with testaceous, below blue-tinted; tibiæ bluish, with a rather broad pale basal annulus, the tarsi testaceous.

Length of body, ♂ 21, ♀ 29; of antennæ, ♂ 7, ♀ 7·5; of pronotum, ♂ 4·85, ♀ 5·5; of tegmina, ♂ 23, ♀ 25; of hind femora, ♂ 12, ♀ 15 millim.

Hab. NORTH AMERICA, Huachuca Mts., and Nogales, Arizona (*coll. U.S. Nat. Mus.; R. E. Kunze*: ♂ ♀).

This insect reminds one very much of some of the pale-winged species of *Trimerotropis*, to which, at first sight, it bears a strong resemblance. *A. aberrans* seems to be rather local in its distribution, but may occur across the boundary-line in Mexico. Three specimens.]

[19. **Arphia canora,** Rehn.

Arphia canora, Rehn, Proc. Acad. Nat. Sci. Phil. 1904, p. 564[1].

? *Arphia nietana,* Scudd. & Ckll. (nec Sauss.), Proc. Dav. Acad. Nat. Sci. ix. p. 28 (1902)[2].

Hab. NORTH AMERICA[1 2], Albuquerque, New Mexico, and Arizona (*colls. Jas. A. G. Rehn, Phil. Acad. Nat. Sci., and L. Bruner*).

A species somewhat resembling *A. teporata*, Scudd., but differing from it in having the fuliginous band of the wings much more strongly indicated, and more especially in having the apices of the latter strongly suffused with fuscous. As compared with *A. nietana*, Sauss., it is more slender, the vertex is narrower, the face is more vertical, the metazona of the pronotum is longer, and the hind femora are less robust. *A. canora* will surely be found to occur in the mountains of Northern Sonora and Chihuahua.]

[20. **Arphia arcta,** Scudd.

Arphia arcta, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 263 (1876)[1]; Sauss. Prodr. Œdip. p. 69 (1884)[2].

Arphia frigida, Caudell (nec Scudd.), Proc. U.S. Nat. Mus. xxvi. p. 786 (1903)[3].

Arphia teporata, Bruner (in part.), Publ. Nebr. Acad. Sci. iii. p. 24 (1893)[4].

Hab. NORTH AMERICA[1–4], Arizona and New Mexico and northward to beyond the 49th parallel.

This species probably occurs also in the mountains of Northern Chihuahua. The characters which separate it from the other members of the genus are given in the synoptic table. It is rather northern in its distribution, as compared with *A. teporata*

and *A. canora*. There are two forms of *A. arcta*, one with yellow and the other with red wings, though the former is the most common.]

[21. **Arphia pulchripennis**, sp. n.

Very similar in general appearance to *A. aberrans*, but differing from that insect in having the disc and costal margin of its wings bright transparent brick-red, instead of greenish-yellow. Its hind femora are more robust and inflated, and the hind tibiæ of a much deeper blue, the banding of the former being more decided, while the dorsum of the abdomen is without the bluish hue mentioned in connection with *A. aberrans*. The pattern of the wing-bar is very nearly the same in the two forms, and both have the X-shaped pale marking on the disc of the pronotum.

Length of body, ♂, 23; of pronotum 5·15, of tegmina 23, of hind femora 12 millim.

Hab. NORTH AMERICA, vicinity of Los Angeles, California (*A. Koebele*).

The present species, as will be seen by a reference to the synoptic table, is also quite closely related to *A. arcta*, *A. teporata*, and *A. canora*. A single male.]

[22. **Arphia teporata**, Scudd.

Arphia teporata, Scudd. Ann. Rep. Chief Eng. 1876, p. 508 (1876) [1].

Hab. NORTH AMERICA [1], Texas (*S. H. Scudder*), Silver City, New Mexico (*coll. L. Bruner*).

After studying a number of specimens of closely allied forms, the writer has concluded to separate them as indicated in the synoptic table. The present species is red-winged, while its nearest ally, *A. arcta*, may be either red- or yellow-winged. The latter has a more northerly habitat and is also more widely distributed; it is a spring insect, living over winter as a nymph.]

23. **Arphia pallidipennis**, sp. n.

Very like *A. arcta*, Scudd., in general appearance, but differing from it in its somewhat slenderer form, the very faintly coloured wings, and the deep blue hind tibiæ. *A. pallidipennis* also differs in having the median carina of the pronotum heavier and more prominent, while the pronotum itself is shorter and more coarsely, though less closely, granulose than in the species to which it is here compared. The wings have the dusky band, although very faint, continued to the front margin; the coloured disc and anterior field is very pale yellow, almost hyaline; and the apex is vitreous.

General colour of the insect pale greyish-brown, becoming darker anteriorly about the base of the tegmina, thorax, and head. The tegmina have their dorsal edge testaceous and free from the small scattered darker mottlings present on the rest of their surface. Hind femora of moderate length and robustness, somewhat varied in the ordinary manner with lighter and darker shades, the lower sulcus pale, the inner face black and pale-banded.

Length of body, ♂ 18, ♀ 27; of antennæ, ♂ 7·5, ♀ 7; of pronotum, ♂ 4·15, ♀ 5·5; of tegmina, ♂ 18, ♀ 23; of hind femora, ♂ 12·5, ♀ 14 millim.

Hab. MEXICO, Coatzacoalcos in Vera Cruz (*C. C. Deam*: ♂), Eslava (*O. W. Barrett*: ♀).

The types, which are in the author's collection, are the only specimens at hand, but the great difference in the climate and altitude above sea-level that exists in these two localities would indicate a fairly wide distribution for the species.

24. **Arphia luteola,** Scudd.

Arphia luteola, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. pp. 515, 516 (1875) [1].

Hab. NORTH AMERICA [1], Texas (*Scudder*), Carrizo Springs, San Antonio (*coll. L. Bruner*).

While no Mexican specimens or records of this species are at hand, its occurrence to the south and west of the Rio Grande is quite certain. Saussure did not know it, as is shown by the labelling of the insect here described as *A. difficilis* (see *anteà*, p. 124).

25. **Arphia decepta,** sp. n.

Arphia behrensi, Sauss. Prodr. Œdip. p. 71 (1884) (in part.) [1].

A medium-sized, broad-winged species, with a very conspicuous carina running over the occiput and continuing to the front end of the scutellum of the vertex, and the disc of the pronotum coarsely granulated.

Scutellum of the vertex moderately deep, about as long as broad (♂), or a little broader than long (♀), the bounding carinæ in advance of the transverse groove straight, meeting in front at about a right angle (♀), or at a somewhat acute angle (♂); lateral foveolæ rather large and quadrate, their inner side shortest, the bounding-walls prominent; frontal costa moderately broad, shallowly sulcate, and continuous to the clypeus. Pronotum rather deep and of moderate length, its sides compressed, the lateral carinæ well-defined, nearly straight, and reaching in advance of the principal sulcus, the latter severing the fairly straight and rather prominent median carina a little in advance of its middle; anterior margin of the disc somewhat advanced upon the occiput, either rounded or gently angulate, the hind edge about a right angle (♂) or somewhat obtuse (♀). Tegmina and wings of normal length, but perhaps a little broader than usual. Hind femora moderately long and coarse, but not greatly inflated, reaching (♀), or extending considerably beyond (♂), the tip of the abdomen.

General colour dark greyish-brown, profusely mottled with darker brown and black, the disc and sides of the pronotum, together with the cheeks, sometimes largely lighter coloured. Wings with the disc some shade of ochraceous or straw-yellow, the fuliginous band of the same pattern as that in *A. luteola* and *A. simplex*, but varying from it, as found in those species, as indicated in the table. Hind femora distinctly and broadly banded, both internally and externally; hind tibiæ more or less infuscated apically, near the middle, and at the base, the intermediate portions being pale testaceous or greenish-blue, thus giving these limbs a banded appearance. Sides of the abdomen, especially near its base, darkened.

Length of body, ♂ 23, ♀ 30; of pronotum, ♂ 5·60, ♀ 7; of tegmina, ♂ 24-25, ♀ 28; of hind femora, ♂ 13·5, ♀ 18 millim.

Hab. MEXICO, Cordova (*Höge*: ♂ ♀), Orizaba (*L. Bruner*: ♂ ♀), San Rafael, Vera Cruz (*C. H. T. Townsend*: ♂), Jalapa (*O. W. Barrett*).

This insect may prove to be the variety *c* of Saussure's *A. behrensi* (see Prodr. Œdip. p. 72); but, as will be readily seen upon examination of his table, that species typically should have the frontal costa narrowed at its upper extremity. *A. decepta* is most nearly related to *A. simplex*, but differs from it in several respects, as shown in the synoptic table.

26. **Arphia simplex,** Scudd.

Arphia simplex, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 514 (1875) [1]; Bruner, Ann. Rep. Nebr. Board Agric. 1896, p. 130 (1897) [2].

Arphia simplex, Sauss. (in part.), Prodr. Œdip. p. 70 (1884) [3].

Hab. North America [1] [2], South-west Texas and northward to Nebraska (*coll. L. Bruner*).—Mexico, Alta Mira, Tamaulipas, and La Joya, San Luis Potosi (*M. E. Hoag*), Victoria, Tamaulipas (*S. N. Rhoads*).

A reference to Saussure's description and account of this species will show that he did not know it, or that he confounded several forms under the one name. His variety *a* undoubtedly refers to *A. luteola*, Scudd., his variety *b* to *A. ramona*, Rehn, and *c* to *A. decepta*, as suggested above. Found in Tamaulipas in January and June, and in San Luis Potosi in August.

[27. **Arphia infernalis,** Sauss.

Arphia infernalis, Sauss. Prodr. Œdip. p. 70 (1884) [1].

Hab. North America, Texas [1].

This insect is not known to the author, but it seems to be a distinct species. *A. infernalis* would fall into close proximity with the male of *A. nietana* in the synoptic table here published. Its distribution must be very local or the species is extremely rare, else it would have been taken by some of the numerous collectors who have furnished the material examined for this work.]

[28. **Arphia ramona,** Rehn.

Arphia ramona, Rehn, Canad. Ent. xxxiv. p. 142 (1902) [1].

? *Arphia behrensi,* Sauss. (in part.), Prodr. Œdip. p. 72 (1884) [2].

? *Arphia simplex,* Sauss. (in part.) loc. cit. p. 71 (1884) [3].

Hab. North America, San Diego, California (*Jas. A. G. Rehn*: ♂ ♀), Los Angeles (*coll. L. Bruner*).

This well-marked species seems to be rather local in its distribution, but will, without doubt, be found later to occur a little further to the southward in Mexican territory. As suggested by the above synonymy, specimens of it may have been examined by Saussure while he was working the genus for his 'Prodromus Œdipodiorum.']

[29. **Arphia koebelei,** sp. n.

Very similar to the preceding, but much smaller and more slender than the average specimens of the latter, and having the wings chrome-yellow, instead of reddish-orange, in colour. As in *A. ramona* the dorsal edge of the tegmina is pale, while the remainder is besprinkled with browner mottling on a paler background. The dusky wing-band is slightly narrower, and does not follow the hind margin towards the anal angle, and the band itself and the apical portion are less strongly fuliginous than in the same sex of that species.

Length of body, ♂, 21; of pronotum 5, of tegmina 21, of hind femora 12 millim.

Hab. North America, San Mateo county, California (*A. Koebele*: ♂).

The wings of the only specimen at hand are rather broader than usual in the genus, approaching somewhat those of *A. luteola* in form, but otherwise the insect resembles *A. ramona*.]

[30. **Arphia frigida,** Scudd.

Arphia frigida, Scudd. in Dawson's Rep. Geol. 49th Par. p. 344 (1875) [1]; Sauss. Prodr. Œdip. p. 68 (1885) [2].

Hab. North America [1 2], Northern California, on Pacific coast northward to Alaska (*coll. L. Bruner*).

Not having access to Scudder's original description of this species, it has been a difficult matter for me to decide definitely as to the insect there described. Then, too, no *Arphiæ* are at hand from the extreme north, hence the selection of the form now under consideration has been made somewhat arbitrarily.]

31. **Arphia behrensi,** Sauss.

Arphia behrensi, Sauss. Prodr. Œdip. pp. 71, 72 (1884) [1].

? *Arphia sulphurea,* Sauss. loc. cit. p. 71 (in part.) [2].

Hab. North America, California [1] (*coll. Calif. Acad. Sciences*).—Mexico (*Saussure*).

Saussure's description of this insect as it appears in the 'Prodromus Œdipodiorum'—"Antennæ breviusculæ. Vertices scutellum ♀ ♂ piriforme quam latius longius. Caput et pronotum crassius granosa; crista pronoti incisa,"—taken together with the place to which it is assigned in his synoptic table of the species, makes it necessary to settle on the insect now chosen to represent *A. behrensi.* Then, too, since it was named in honour of James Behrens, of San Francisco, California, we can hardly do otherwise, even though two or three other forms were included as varieties. Possibly both *A. ramona,* Rehn, and *A. decepta,* here described, were referred to as such varieties (see notes under those species).

[32. **Arphia sulphurea,** Fabr.

Gryllus sulphureus, Fabr. Spec. Ins. i. p. 369 (1781) [1].

Gryllus (*Locusta*) *sulphureus,* Gmel. Syst. Nat. i. 4, p. 2079 (1788) [2].

Acridium sulphureum, Oliv. Encycl. Méth. vi. p. 227 (1791) [3].

Locusta sulphurea, Harr. in Hitchcock's Rep. Geol. Mass. p. 583 (1833) [4].

Œdipoda sulphurea, Burm. Handb. Ent. ii. p. 643 (1838) [5]; Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 470 (1862) [6]; Glover, Ill. N. Amer. Ent., Orthopt. t. 5. fig. 6 (1872) [7].

Acridium (*Œdipoda*) *sulphureum,* Haan, Bijdr. Kenn. Orthopt. p. 143 (1842) [8].

Tomonotus sulphureus, Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 105 (1873) [9].

Arphia sulphurea, Stål, Recens. Orthopt. i. p. 119 (1873) [10]; Sauss. Prodr. Œdip. p. 71 (1884) (in part.) [11].

Hab. North America [1–11], United States and Canada east of the Rocky Mountains, especially northward.

While this insect probably does not reach the region under investigation, it was made the type of the genus, hence should be included here. The Californian habitat given for this species very likely belongs to the preceding, or it may be even to *A. frigida*, both of which are Pacific slope forms, while *A. sulphurea* is confined to the eastern half of the continent.]

CHORTOPHAGA, Saussure.

Tragocephala, Harris, Ins. Inj. to Veget. 1st edit. p. 147 (1841, 1842); Stål, Recens. Orthopt. i. p. 119 (1873); Thomas, Acrid. N. Amer. p. 102, fig. 7 (1873); Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 481 (1875) (nomen præocc.).

Chimarocephala, Scudder (in part.), Proc. Bost. Soc. Nat. Hist. xix. p. 89 (1876).

Chortophaga, Saussure, Prodr. Œdip. p. 72 (1884).

A characteristic North-American genus composed of comparatively few species, which are very variable in colour and widely distributed. The nymphs live over winter and therefore are among the first locusts to mature in spring. The males are moderately noisy insects and their stridulating may be heard on warm days of early spring. These insects frequent the margins of groves, thickets, and weed patches, among the fallen leaves and other débris in which they hide during cold weather.

Table for separating the Species of Chortophaga.

A. Scutellum of the vertex in the ♀ triangular; the posterior field of the wing provided with a semilunar fuscous band.	
b. Tegmina and wings fully developed, fully as long as or longer than the abdomen.	
c. Larger: North America from Northern Mexico to the great lakes	1. *viridifasciata,* De Geer.
cc. Smaller: Central America, in the mountains of Costa Rica .	2. *meridionalis,* sp. n.
bb. Tegmina and wings abbreviated	[3. *brevipennis,* Scudd.]
AA. Scutellum of the vertex in the ♀ obtuse, pentagonal, the apex obtuse; the wings sublimpid (Island of Cuba)	4. *cubensis,* Scudd.

1. **Chortophaga viridifasciata,** De Geer.

Acrydium viridifasciatum, De G. Mém. Hist. Ins., Orthopt. iii. p. 498, t. 42. fig. 6 (1773) [1].

Locusta (*Tragocephala*) *viridifasciata,* Harr. Ins. Inj. to Veg. 1st ed. p. 147 (1841) [2]; 3rd ed. p. 182, t. 3. fig. 2 (1862) [3].

Tragocephala viridifasciata, Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 461 (1862) [4]; Proc. Bost. Soc. Nat. Hist. xvii. p. 481 (1875) [5]; Glover, Ill. N. Amer. Ins., Orthopt. t. 5. fig. 9 (1872) [6]; Thomas, Syn. Acrid. N. A. p. 103, t. 1. fig. 3 (1873) [7]; Stål, Recens. Orthopt. i. p. 119 (1873) [8]; Riley, Rep. Ins. Missouri, viii. p. 149, fig. 46 (1876) [9].

Chortophaga viridifasciata, Sauss. Prodr. Œdip. p. 72, t. 1. figg. 7, 12 [10]; Scudd. Cat. Orthopt. U.S. p. 31 (1900) [11].

Locusta (*Tragocephala*) *infuscata,* Harr. Ins. Inj. to Veg. 3rd ed. p. 181 [12].
Tragocephala infuscata, Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 461 (1862) [13]; Glover, Ill. N. Amer. Ent., Orthopt. t. 10. fig. 10 (1872) [14]; Thomas, Syn. Acrid. N. Amer. p. 102, t. 1. fig. 7 (1873) [15].
Tragocephala viridifasciata infuscata, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 481 (1875) [16]; Thomas, Rep. Illinois St. Ent. ix. p. 106 (1880) [17].
Chortophaga viridifasciata infuscata, Blatch. Canad. Ent. xxiii. p. 76 (1891) [18].
Locusta (*Tragocephala*) *radiata,* Harr. Ins. Inj. to Veg. 3rd ed. p. 183 [19].
Tomonotus zimmermanni, Sauss. Orthopt. Nov. Amer. ii. p. 23 (1861) [20].

Hab. North America [1–20], generally, from the Rio Grande to middle Canada east of the Rocky Mountains.—Mexico, along the Rio Grande (*L. Bruner*).

This insect is dimorphic in colour throughout its range, both green and fuscous forms being found. In the north, however, the dark-coloured individuals predominate, while in the south the reverse is the case. There is also some variation in minor structure, but not enough to warrant the separation of named varieties.

2. **Chortophaga meridionalis,** sp. n.

Very similar in general appearance to the preceding, but differing from it in the somewhat smaller size and proportionately shorter tegmina and wings. Compared with the North-American insect, *C. meridionalis* has a shorter, less angulate pronotum, with a little lower and less arched median carina. The fastigium of the vertex is more obtuse, and the frontal costa somewhat broader, smoother, and less deeply sulcate. The intercalary vein of the present form is also more prominent and somewhat bowed, and lies nearer the cubital than it does in *C. viridifasciata*; all the veinlets in the basal portion of the tegmina of *C. meridionalis* are heavier, and give this part a rougher appearance.

In colour the two insects are very similar; but, perhaps, the present species is more uniformly the same in different individuals. Still, both light and dark colour-phases occur.

Length of body, ♂ 16, ♀ 26; of antennæ, ♂ 5·5, ♀ 6; of pronotum, ♂ 4, ♀ 6·1; of tegmina, ♂ 15, ♀ 22; of hind femora, ♂ 10·5, ♀ 15·5 millim.

Hab. Costa Rica, slopes of the Volcan de Irazu, at an elevation of 7500 to 9000 feet (*P. Biolley, M. A. Carriker, M. Cary, L. Bruner*).

If this insect occurred throughout Mexico and other Central-American countries, I should regard it as a local race of the preceding species. As it is, however, we must consider it to have been long enough separated from that form to constitute a good, but remarkably similar, species.

[3. **Chortophaga brevipennis,** Scudd.

Tragocephala brevipennis, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 483 (1875) [1].
Chimarocephala brevipennis, Scudd. Ann. Rep. Chief Eng. 1876, p. 508 (1876) [2].
Chortophaga brevipennis, Sauss. Prodr. Œdip. p. 73 (1884) [3].

Hab. North America, California (*S. H. Scudder*).

Not recognized by the present writer.]

4. **Chortophaga cubensis,** Scudd.

Tragocephala cubensis, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 483 (1875) [1].
Chimarocephala cubensis, Scudd. Ann. Rep. Chief Eng. 1876, p. 508 (1876) [2].
Chortophaga cubensis, Sauss. Prodr. Œdip. p. 74 (1884) [3].

Hab. ANTILLES, Cuba [1 2 3] (*Scudder, Saussure, Bolivar*).

CHIMAROCEPHALA, Scudder.

Chimarocephala, Scudder, Ann. Rep. Chief Eng. 1876, p. 508 (1876).
Tragocephala (in part.), Thomas (nomen præocc.).

This genus, which is rather closely related to the preceding, occurs only in the mountain districts of Southern California and the Pacific coast of Mexico. Three so-called species are known. They may be separated thus :—

Table for separating the Species of Chimarocephala.

A. Front uniting with the vertex in an angle. The hind margin of the pronotum somewhat acute. Scutellum of the vertex gently declivous.
b. Body ridged, wrinkled, or coarsely rugose. Tegmina and wings complete in both sexes . . . . . [1. *pacifica,* Thom.]
bb. Body less strongly rugose. Tegmina and wings somewhat abbreviate in the female . . . . . [2. *behrensi,* Sauss.]
AA. Front roundly uniting with the vertex. The hind margin of the pronotum somewhat obtuse-angled. Scutellum of the vertex decidedly sloping . . . . . 3. *otomita,* Sauss.

[1. **Chimarocephala pacifica,** Thomas.

Tragocephala pacifica, Thomas, Syn. Acrid. N. Am. p. 101 (1873) [1].
Chimarocephala pacifica, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 484 (1875) [2]; Sauss. Prodr. Œdip. p. 75 (1884) [3].

Hab. NORTH AMERICA, Los Angeles, California (*D. W. Coquillett*).

While there are no records of this species from south of the international boundary-line between the United States and Mexico, it certainly occurs to within a few miles of the frontier and will eventually be taken in Southern California. Colour-variations, similar to those found in the members of the preceding genus, are also characteristic of this and the next species.]

[2. **Chimarocephala behrensi,** Sauss.

Chimarocephala behrensi, Sauss. Prodr. Œdip. p. 75 (1873) [1].

Hab. NORTH AMERICA, California to as far north as the 39th parallel; LOWER CALIFORNIA, San Jose del Cabo (*coll. Cal. Acad. Sciences*).]

3. **Chimarocephala otomita,** Sauss.

Tomonotus otomitus, Sauss. Rev. et Mag. Zool. xiii. p. 322 (1861) [1].
Chimarocephala otomita, Sauss. Prodr. Œdip. p. 75 (1884) [2].

Hab. Mexico [1 2] (*Saussure*).

Not known to the present writer.

ENCOPTOLOPHUS, Scudder.

Encoptolophus, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 478 (1875).
Tragocephala (in part.), Stål, Recens. Orthopt. i. p. 119 (1873).
Œdipoda (in part.), auctt.

This is another genus of the Œdipodinæ belonging exclusively to the American continent. In its distribution it is confined chiefly to the territory covered by the present paper. As indicated by the annexed table, the species are readily separable into two rather distinct groups.

Table for the separation of the Species of Encoptolophus.

A. Body very noticeably compressed and deep through the thorax. The median carina of the pronotum well developed. Tegmina regularly transversely banded.
  b. Insects never largely, or even in part, green.
    c. Larger. Head usually much wider than the front edge of the pronotum, the latter with the lateral carinæ much interrupted in front of the principal sulcus. Dusky bands of the tegmina transverse.
      d. Median carina of the pronotum well developed, the anterior portion the highest. General colour very dark; hind tibiæ fuliginous . . . . . [1. *sordidus,* Burm.]
      dd. Median carina of the pronotum less elevated, the two halves of equal height. General colour griseous; hind tibiæ glaucous . . . . . [2. *coloradensis,* sp. n.]
    cc. Smaller. Head not much wider than the front edge of the pronotum, even in the female. Lateral carinæ of the pronotum less broadly interrupted in advance of the principal sulcus. Bands of the tegmina oblique.
      d. Summit of the head with only a faint median carina. Tegmina considerably longer than the abdomen . . . . . 3. *costalis,* Scudd.
      dd. Summit of the head provided with a distinct median carina. Tegmina and wings but little, if any, longer than the abdomen in the ♀ . . . . . 4. *parvus,* Scudd.

bb. Insect frequently in large part green.
c. General form rather robust. The sulcus of the vertex pyriform, rather broadly so in the ♀.
d. Pronotum decidedly obtuse-angled posteriorly; the median carina severed near its middle. (Montana.) . . . . . [5. *montanus*, sp. n.]
dd. Pronotum nearly right-angled posteriorly; the median carina severed considerably in advance of the middle. (Mountains of Chihuahua.) . . . . . 6. *fuliginosus*, sp. n.
cc. General form more slender. The sulcus of the vertex much narrower, its sides evenly convergent anteriorly.
d. Smaller. The lateral carinæ of the pronotum slightly interrupted in advance of the principal sulcus. (Mexico southward.) . . . . . 7. *herbaceus*, sp. n.
dd. Larger. The lateral carinæ of the pronotum uninterrupted. (Southern California.) . . . . . [8. *californicus*, sp. n.]
AA. Body more nearly cylindrical, less deep through the thorax. Median carina of the pronotum rather weak. Tegmina less regularly marked with light and dark.
b. Tegmina and wings extending considerably beyond the tip of the abdomen in both sexes, the latter yellowish-hyaline basally, infuscated apically . . . . . 9. *texensis*, sp. n.
bb. Tegmina and wings, at least in the ♀, extending but little, if at all, beyond the tip of the abdomen; the wings pellucid.
c. More robust: the sexes rather unequal in size. Hind femora robust . . . . . 10. *subgracilis*, Caudell.
cc. More slender: the sexes not greatly unequal in size. Hind femora less robust . . . . . [11. *pallidus*, Bruner.]

[1. **Encoptolophus sordidus**, Burm.

Œdipoda sordida, Burm. Handb. Ent. ii. p. 643 (1838)[1]; Glover, Ill. N. Amer Ent., Orthopt. t. 10. fig 11 (1872)[2]; Thomas, Acrid. N. Amer. p. 116 (1873)[3].
Acridium (*Œdipoda*) *sordidum*, Haan, Bijdr. Kenn. Orthopt. p. 143 (1842)[4].
Tragocephala sordida, Stål, Recens. Orthopt. i. p. 119 (1873)[5]; Thomas, Rep. St. Ent. Illinois, ix. p. 211 (1880)[6].
Encoptolophus sordidus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 479 (1875)[7]; Sauss. Prodr. Œdip. p. 77 (1884)[8].
Œdipoda (*Encoptolophus*) *sordida*, Prov. Faune ent. Canad. ii. p. 41 (1877)[9].
Arphia sordida, Osborn, Bull. Div. Ent. U.S. Dept. Agric. xxiii. p. 59 (1891)[10].
Locusta periscelidus, Say, in Harr. Cat. Ins. Mass. p. 56 (1835)[11].
Locusta nebulosa, Harr. Ins. Inj. to Veg. p. 146 (1841)[12].

Hab. North America[1–12], Texas (*Saussure*), U.S. and Canada east of the Rocky Mountains (*Scudder*).

This insect, which is the type of the genus, will very likely be found to occur likewise in portions of Northern Mexico.]

[2. **Encoptolophus coloradensis,** sp. n.

Somewhat resembling *E. sordidus* in general form, but differing from it in several respects. The chief of these variations are—a lower median carina of the pronotum, in which the two sections are about equal in height, glaucous (instead of fuliginous) hind tibiæ, and a prevailingly pale greyish-testaceous colour, with decided dark markings on the tegmina, hind femora, and posterior half of the pronotal disc.

Length of body, ♂ 19, ♀ 28; of antennæ, ♂ 7, ♀ 8; of pronotum, ♂ 4, ♀ 5; of tegmina, ♂ 11, ♀ 20; of hind femora, ♂ 11, ♀ 14 millim.

Hab. North America, Fort Collins, Colorado (*C. P. Gillette*).

A pair, captured on August 14th.]

3. **Encoptolophus costalis,** Scudd.

Œdipoda costalis, Scudd. Bost. Journ. Nat. Hist. vii. p. 473 (1862) [1]; Thomas, Acrid. N. Amer. p. 112 (1873) [2].

Tragocephala costalis, Stål, Recens. Orthopt. p. 119 (1873) [3].

Encoptolophus costalis, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 480 (1875) [4]; Sauss. Prodr. Œdip. p. 77 (1884) [5].

Hab. North America [1–5], Texas, New Mexico, &c.—Mexico, Alta Mira in Tamaulipas, Zapotanito and Juanacatlan in Jalisco (*Jas. A. G. Rehn*).

The author has authentic specimens of both this and the following species before him as these lines are being written. These insects bear labels in Scudder's handwriting. They appear to be distinct.

4. **Encoptolophus parvus,** Scudd.

Encoptolophus parvus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 480 (1875) [1]; Sauss. Prodr. Œdip. p. 78 (1884) [2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 524 [3].

Hab. North America, Texas [1–3].—Mexico, Guadalajara in Jalisco (*Jas. A. G. Rehn*).

This may be only a diminutive, short-winged variety of *E. costalis,* as suggested by Saussure (*loc. cit.*); but the differences as given in the synoptic table point to a separation of the two as distinct species.

[5. **Encoptolophus montanus,** sp. n.

Encoptolophus sordidus, Cooley, Bull. Agr. Exp. Stat. Mont. no. 51, p. 238, t. 6. fig. 4 (1904) (nec Burm.) [1].

The insect here referred to as new is much smaller than *E. sordidus* (Burm.), with which it may be briefly compared. In size and form it is very similar to *Camnula pellucida,* a species that is largely testaceous, instead of green and cinereous. *E. montanus* differs from *E. sordidus* by being frequently in great part green, especially in the ♀, and in having the dark markings of the tegmina more decided, the abdomen lighter-coloured, and the X-shaped light mark of the disc of the pronotum frequently absent. The hind

tibiæ are deep greyish-blue, while in *E. sordidus* they are fuscous and with a sub-basal pale annulus, and the median fuliginous band of the tegmina is oblique, not transverse, as in *E. sordidus*.

Length of body, ♂ 17, ♀ 24; of pronotum, ♂ 3·6, ♀ 5; of tegmina, ♂ 13·5, ♀ 20; of hind femora, ♂ 10, ♀ 13·5 millim.

Hab. North America, Bozeman, Montana (*R. A. Cooley*).

Although *E. montanus* is not likely to be found in Mexico, the fact that it is subalpine in its habitat suggests its rather close relationship to the following two species.]

6. **Encoptolophus fuliginosus,** sp. n.

General colour rather dark smoky-brown, with darker markings on the sides of the pronotum, the tegmina, and hind femora, the lighter portions sometimes largely green, as in *E. montanus*, which is about the same size. Compared with that insect, the present species has decidedly well-defined dark sides to the pronotum (while in *E. montanus* this infuscation is scarcely noticeable), the hind femora are more strongly banded externally, the hind tibiæ are leaden-brown (instead of decidedly blue), and the banding of the tegmina is inconspicuous.

Structurally *E. fuliginosus* is rather more slender than *E. montanus*; the pronotum is a little longer and less strangulate in advance of the principal sulcus, the hind lobe of the disc is longer, the apex is more acute (being right-angled, rather than obtuse), and the sides are much more smooth and shiny; the hind femora are longer and more strongly carinate; and the head is narrower, with the median costa of the face less broad and more deeply sulcate.

Length of body, ♂ 18, ♀ 27; of pronotum, ♂ 3·85, ♀ 5·1; of tegmina, ♂ 15, ♀ 20; of hind femora, ♂ 10·5, ♀ 14·25 millim.

Hab. Mexico, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

A large series of both sexes. Judging from the number of specimens at hand, the present species must be very common, possibly abundant, and may even be destructive to vegetation.

7. **Encoptolophus herbaceus,** sp. n. (Tab. II. fig. 13, ♀.)

Size small, the body compressed, moderately slender. Head no broader than the front edge of the pronotum, its vertex somewhat narrower than in any of the preceding species, the sulcus decidedly elongate, acuminate in front, to a much greater extent in the ♂ than in the ♀, the posterior extremity provided with a strong median carina that fades away on the occiput; lateral foveolæ equilaterally triangular, but gently sulcate; frontal costa moderately prominent, the sides gently divergent below, shallowly sulcate; antennæ short and rather heavy, especially so apically, in the ♀ about reaching the posterior sulcus, in the ♂ extending to the hind edge of the pronotum. Pronotum with the sides nearly parallel on the anterior lobe, divergent behind; lateral carinæ almost equally prominent throughout, straight, about one-third nearer together in front than behind; median carina rather coarse and moderately prominent, cut considerably in advance of its middle by the principal sulcus; hind margin almost a right angle (♀), or somewhat acute (♂). Tegmina in the ♀ reaching the tip of the abdomen, in the ♂ extending about one-fourth their length beyond it. Hind femora rather compressed, not quite reaching the apex of the abdomen in either sex.

General colour of the head, the pronotum, the sides of the meso- and metathorax, the external face of the hind femora, and the tegmina green (♀) or pale testaceous (♂). Sides of the head back of the eyes and the anterior part of the upper edge of the sides of the pronotum, together with a quadrate patch in the middle of the latter, dark piceous. Hind femora marked above with one conspicuous, and one or two smaller, oblique patches of black, and on the lower half of the outer face by two rather narrow very oblique dashes of the same colour. Tegmina provided with the usual fuscous bars, the middle one large and

somewhat oblique. Hind tibiæ pale glaucous, the base broadly annulate with pale testaceous or dirty white.

Length of body, ♂ 12, ♀ 21; of antennæ, ♂ & ♀, 4; of pronotum, ♂ 2·9, ♀ 4; of tegmina, ♂ 11, ♀ 16; of hind femora, ♂ 9, ♀ 11 millim.

Hab. MEXICO, Chapultepec (*L. Bruner*).

This beautiful little insect was found by the author in the fields about the outskirts of Mexico city, where it occurred in moderate numbers.

[8. **Encoptolophus californicus,** sp. n.

An insect of moderate size, but rather slender in build, and with an oblique face, when viewed laterally. The ♀ is largely green and the ♂ wood-brown. Both sexes show the usual dark markings, though in a less degree than in most of the other species of the genus. Pronotum with the lateral carinæ very prominent and straight, continuous, gently converging in front; median carina cut a little in advance of the middle by the last transverse sulcus, which alone shows on the disc; hind margin of the latter somewhat obtuse in both sexes. Tegmina and wings surpassing the tip of the abdomen in both sexes. Hind femora about normal (♀), or somewhat enlarged (♂). Occipital carina prominent and continuous to the front edge of the pronotum. Vertex narrow and projecting prominently forward in advance of the eyes.

Length of body, ♂ 18, ♀ 25; of antennæ, ♂ 7, ♀ 6; of pronotum, ♂ 4·15, ♀ 5·1; of tegmina, ♂ 16·5, ♀ 21; of hind femora, ♂ 11·5, ♀ 14 millim.

Hab. NORTH AMERICA, Los Angeles, California (*D. W. Coquillett*: ♂ ♀).

This locust should be included in the present work on account of its habitat being in such close proximity to Mexican territory. It bears some resemblance at first glance to the different species of the genus *Chortophaga*. The male in particular has this appearance.]

9. **Encoptolophus texensis,** sp. n.

? *Encoptolophus parvus* Scudd. & Ckll. Proc. Dav. Acad. Sci. ix. p. 29 (1902) [1].

In this insect the body is somewhat cylindrical, the median carina of the pronotum is sometimes rather weak, but equally prominent on both lobes, and the lateral carinæ are for the most part inconspicuous and greatly interrupted in advance of the principal sulcus. In some individuals the disc on each side of the pronotum is irregularly tumescent in advance of the main sulcus. The vertex between the eyes is somewhat narrower than their shortest diameter and fairly deeply sulcate, pyriform in shape, and provided with rather prominent bounding-walls, while the posterior longitudinal or occipital carina is nearly obliterated. The pronotum is shorter than usual, and has the anterior lobe cylindrical, but the hind lobe rapidly expands and is provided with well-marked shoulders; the posterior edge is nearly a right angle, sometimes a little more or less. Tegmina extending beyond both the tip of the abdomen and the apex of the hind femora in the two sexes. Hind femora somewhat robust, but of normal length.

General colour ferrugineo-brunneous or greyish-brown, with darker markings on the tegmina and hind femora. The dorsal edges and the apical third of the former irregularly mottled with small fuscous dots, otherwise with the rather definite dark markings common to the members of this genus. Hind femora showing traces above and towards the apex of dusky bands. Hind tibiæ with their base broadly pale, for the rest glaucous. Wings yellowish-hyaline, their apices and outer posterior border tinged with fuliginous, the veins and veinlets of this area infuscated, the stigma large and strongly tinged with black.

Length of body, ♂ 18, ♀ 25; of pronotum, ♂ 3·95, ♀ 4·1; of tegmina, ♂ 17, ♀ 23; of hind femora, ♂ 10, ♀ 13·5 millim.

Hab. NORTH AMERICA, Southern California and El Paso (*G. W. Dunn*), Carrizo

Springs, Texas (*A. Wadgymar*), Mesilla, New Mexico (*C. H. T. Townsend*).—MEXICO, Queretero and Lerdo, Durango (*L. Bruner*).

The present species is a somewhat aberrant form, but it must be placed in this genus for the present. It may be the insect referred to by Scudder and Cockerell (*l. c.*) as *Encoptolophus parvus*.

10. **Encoptolophus subgracilis,** Caudell.

Encoptolophus subgracilis, Caudell, Proc. Ent. Soc. Wash. v. p. 163 (1903) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. p. 566 (1904) [2].

Hab. NORTH AMERICA, Arizona [1 2], Los Angeles, California (*D. W. Coquillett*).—MEXICO, Mazatlan (*coll. Amer. Mus. Nat. Hist.*).

[11. **Encoptolophus pallidus,** Bruner.

Encoptolophus pallidus, Bruner, N. Am. Fauna, vii. p. 266 (1893) [1].

Hab. NORTH AMERICA [1], Panamint Valley, California (*A. Koebele*), Tucson, Arizona (*H. F. Wickham*).

This insect is a denizen of the desert, and will no doubt be found later to occur in Northern Mexico.]

HIPPOPEDON, Saussure.

Hippopedon, Saussure, Rev. et Mag. Zool. (2) xiii. p. 322 (1861); Prodr. Œdip. p. 80 (1884).

1. **Hippopedon saltator,** Sauss.

Hippopedon saltator, Sauss. Rev. et Mag. Zool. (2) xiii. p. 323 (1861) [1]; Prodr. Œdip. p. 80 (1884) [2]; Thomas, Acrid. N. Amer. p. 218 (1873) [3].

Hab. MEXICO (*Saussure* [2]), Morelos (*A. Koebele*), Cuernavaca (*H. Barrett*).

This insect is not represented in the material before me; but a couple of specimens, male and female, are contained in the present writer's collection. It looks like a species that might make its home amongst ordinary grasses and low herbage, rather than in rank, growing, forest vegetation.

[CAMNULA, Stål.

Œdipoda (in part.), Scudder, Bost. Journ. Nat. Hist. vii. p. 467 (1862).
Camnula, Stål, Recens. Orthopt. i. p. 114 (1873).

While *Camnula* is represented by but a single species, it enjoys a wide distribution, being found in North America from the Atlantic to the Pacific. It occurs very abundantly in the United States northward and in portions of British America. In

many localities it is one of the destructive species. The following synonymy will at once indicate the variability that exists in this insect.

1. **Camnula pellucida,** Scudd.

Œdipoda pellucida, Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 472 (1862) [1].
Œdipoda (*Camnula*) *pellucida,* Prov. Faune ent. Canad. ii. p. 40 (1877) [2].
Camnula pellucida, Scudd. in Hitchcock's Geol. N. H. i. p. 378 (1874) [3].
Œdipoda atrox, Scudd. Rep. U.S. Geol. Surv. Nebr. p. 253 (1872) [4].
Camnula tricarinata, Stål, Recens. Orthopt. i. p. 120 (1873) [5].
Stenobothrus obiona, Thomas, Ann. Rep. U.S. Geol. Surv. Terr. ii. pp. 266, 279 (1871) [6].
Camnula pellucida obiona, Cockerell, Trans. Amer. Ent. Soc. xx. p. 337 (1894) [7].

Hab. North America, California, Arizona, and New Mexico, in the mountain valleys [1–7].

This species is certainly found in the mountains of Northern Mexico also, although we have at present no records of such occurrence.]

HIPPISCUS, Saussure.

Hippiscus, Saussure, Rev. et Mag. Zool. (2) xiii. p. 398 (1861); Scudder, Psyche, vi. pp. 265 &c. (1892).

The members of this genus, with perhaps a single exception, are confined entirely to North America. *Hippiscus,* however, is best represented in the vicinity of the boundary between Mexico and the United States, where a rather large number of species occur. Several of these insects enjoy a wide distribution, in some instances ranging from Central Mexico almost, or quite, to the Saskatchewan River, and from the interior basin of Utah to Florida and the New England States. With a knowledge of this extended range of certain species in mind, it is thought best to enumerate all the forms that are known to occur in the territory lying within a short distance to the northward of the country included within the scope of this work.

As a rule, the representatives of the genus *Hippiscus* are rather large and robust, being among the largest forms belonging to the subfamily. Some of the species live over winter as nymphs, and are therefore among the first mature locusts to appear in the spring. Both red- and yellow-winged individuals are to be met with; but generally the individuals of each species are all either the one or the other as regards the wing-colour. Like many others of the Œdipodine genera, *Hippiscus* is rather characteristic of arid and semiarid regions. The genus may be separated into three well-defined sections or subgenera, viz., *Hippiscus*, *Sticthippus*, and *Xanthippus*. These sections, together with the species treated, may be recognized by the following table.

Table for separating the Species of Hippiscus *.

A. Antennæ of the ♂ not attenuate or arcuate at the extremity; median carina of the pronotum cut only by the typical sulcus, which is obsolete or rapidly fades out on the lateral lobes; the posterior femora generally more dilated and with the inferior border more arcuate.

b. No distinct sunken biareolate area at the summit of the frontal costa; if vaguely present, separated from the costa below by no carina or angle. Median carina of the pronotum sharply distinct throughout. Markings of the tegmina usually pantherine. Mesosternal lobes separated by a piece more nearly quadrate than truncato-cuneate, though the posterior corners of the lobes are rounded, but narrowly and abruptly. (Hippiscus.)

c. Anterior extremity of the scutellum of the vertex not prolonged, narrowing rapidly, in front (except in *H. pantherinus*) as broad as or broader than half the width at the middle; hind margin of the pronotum usually rectangulate; margins of the tegmina distinctly pantherine.

d. Frontal costa distinctly, often considerably, narrowed at its upper extremity, except in some females hardly, or even less than, one-fourth the width of the space between the eyes; the scutellum of the vertex rarely furnished with transverse carinæ, then generally faint, and the longitudinal carina terminating in the centre with rare exceptions. Calcaria of the opposite sides of the hind tibiæ subequal.

e. Lower third of the tegmina free from dark markings, except in the anal area; the markings hardly pantherine. Tegmina tapering; the basal lobe of the costal margin prominent, the width at this point being fully one-third greater than at the tip of the lower ulnar vein. Lateral carinæ of the pronotum not very sharp . . . . . 1. *phœnicopterus*, Germ.

ee. Not more than the lower fourth of the tegmina, if any, free from dark markings, these distinctly pantherine. Tegmina subequal; the lobe of the costal margin less pronounced, the width at this point being scarcely more than one-sixth greater than at the tip of the lower ulnar vein. Lateral carinæ of the pronotum sharp.

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* This Table is simply that of Scudder, modified to cover the forms here mentioned. (See 'Psyche,' vi. pp. 266–274, June 1892.)

f. Vertical scutellum hexagonal or heptagonal, broader than long, the sides very rapidly narrowing in front and distinctly angulate next the front edge of the eye. The light transverse markings of the apical half of the tegmina scarcely more than one-half as broad as the darker markings . . . . . [2. *pantherinus,* Scudd.]

ff. Vertical scutellum longer than broad, pyriform, the sides distinctly rounded and less rapidly narrowing. Light markings of the apical half of the tegmina almost or quite as broad as, or even broader than, the darker markings.

g. Granules on the dorsum of the metazona by their confluence distinctly following lines forming oblique rugæ parallel to the hind margin. Lateral canthi of the pronotum as distinct and sharp on the hinder portion of the prozona as on the front part of the metazona . . . . . [3. *haldemani,* Scudd.]

gg. Granules on the dorsum of the metazona rarely confluent, and when this is the case showing no marked tendency to follow lines parallel to the hind margin. Lateral angles or ridges of the pronotum much less distinct and duller on the hinder part of the prozona than on the front part of the metazona . . . . . 4. *texanus,* Scudd.

dd. Frontal costa not at all or scarcely narrowed at its upper extremity, always more than one-third, sometimes nearly one-half, the width of the space between the eyes; the scutellum of the vertex divided by longitudinal and transverse carinæ into four subequal quadrants. Calcaria of hind tibiæ markedly unequal on the opposite sides.

e. Lateral canthi of the pronotum not very sharp, interrupted and devious between the sulci; the metazona of the ♀ distinctly longer than the prozona, the former comparatively smooth . . . . . [5. *rugosus,* Scudd.]

ee. Lateral canthi of the pronotum acute, continuous throughout, arcuate; metazona of the ♀ scarcely longer than the prozona, the former with the disc moderately rugose . . . . . 6. *ocelote,* Sauss.

cc. Anterior extremity of the scutellum of the vertex prolonged, narrowing gradually, in front less than half the width at the middle; hind margin of the pronotum acutely angled (rarely, by variation, rectangulate); markings of tegmina hardly or not at all pantherine.

d. Metazona with two pairs of distinct lateral rugæ parallel to the hind margin; basal discoidal field of the tegmina, including the ulnar area, broadly maculate, the apical half multimaculate; ulnar tænia of the hind wings ending far short of the base, the intermediate space filled with closely crowded cross-veins; veins at the end of the humeral field more or less laterally stained with blackish-fuscous at the cross-veins, rarely absent . . . 7. *saussurei,* Scudd.

dd. Metazona without lateral oblique rugæ; basal discoidal field of the tegmina, and especially the ulnar area, almost or quite immaculate, the apical half paucimaculate; ulnar tænia almost reaching the base, the cross-veins next the base not closely crowded; veins at the end of the humeral field immaculate . . . . . 8. *tuberculatus,* Pal. Beauv.

bb. At the point where the scutellum of the vertex and the frontal costa meet, between the apices of the lateral foveolæ, a distinct sunken transversely biareolate field on the frontal fastigium easily distinguished, both from the vertical scutellum and the frontal costa. Posterior sulcus of the prozona terminating on the typical sulcus in two forks, one at the lateral borders of the normal discal scutellum, the other, by deeply cutting the lateral walls of the scutellum, close to the median line. Median carina of the metazona posteriorly more or less subobsolete in the ♀. Markings of the tegmina not distinctly pantherine. Mesosternal lobes separated by a truncate, but distinctly wedge-shaped, median piece, the posterior corners of the lobes being very broadly rounded. (STICTHIPPUS.) . . . . . [9. *californicus,* Scudd.]

AA. Antennæ of the ♂ attenuate or arcuate, in dried specimens often partly coiled, at the extremity; median carina of the pronotum intersected by two sulci and generally obliterated between them, but sometimes indicating the anterior sulcus only by sinuation; posterior femora generally less dilated, the inferior border less arcuate. (XANTHIPPUS.)

b. Antennæ of the ♂ usually as long as the hind femora, gradually attenuated apically for at least one-fifth their length, curled, cochleate, or hooked at the tip when dry. Tegmina distinctly pantherine in markings; occasionally obscured (in variation) by obsolescence; intercalary vein arcuate, approaching at least twice as close to the median at its apex as near its base. The fuscous transverse band of the wings so far removed from the apex as to leave a vitreous area, especially in the ♀, covering four marginal lobes or even more. Pronotal carina, with rare exceptions,

more or less obliterated between the principal sulci. Summit of the cranium usually carinulate between the eyes.

c. ♂ of medium or large size, the tegmina surpassing the abdomen in both sexes; area of the ulnar fork rarely filled with a single, usually with a complete double, row of cells. Metazona usually tumid centrally to a greater or less extent, and considerably depressed or indentate anteriorly on either side of the median carina.

d. Intercalary vein of the tegmina near its extremity running so close to the median as commonly to be hardly separated from it by more than its own thickness; markings of the tegmina sharp and well-defined; transverse bands of the wings distinctly narrowed, sometimes obsolescent, at the anal vein; process of the metazona normally less than a right angle.

e. Bounding-walls of the vertical scutellum and other carinæ of the vertex generally dull and low; metazona about two-thirds as long again as the prozona, its dorsum variable, its rugosities not very prominent, rarely confluent; the transverse fuscous band of the wings usually very broad, in the second lobe below the anal vein often more than twice as broad as the width of the lobe.

f. Species of great size; the maculations on the apical third of the tegmina often obscure by lack of depth of colour, lessening the contrasts between the darker and lighter spots, but sometimes sharp and well-defined; the fuscous band of the wings generally very dark; inside of the hind femora usually blue, except the red apical third . . . . 10. *corallipes*, Hald.

ff. Species of rather small or medium size; the maculations on the apical third of the tegmina generally with distinct contrasts; the fuscous band of the wings generally fuliginous; inside of the hind femora usually wholly red . . . . . 11. *zapotecus*, Sauss.

ee. Bounding-walls of the vertical scutellum and other carinæ of the vertex usually sharp and relatively high; metazona twice as long as the prozona, its dorsum centrally tumid, its rugosities prominent and usually more or less confluent; the transverse fuscous band of the wings usually narrow or moderate, in the second lobe below the anal vein rarely so much as twice the width of the lobe.

f. The transverse pale band of the anterior margin of

the tegmina opposite the middle of the intercalary vein but little broader than the others; the fuscous band of the wings narrow, hardly touching the margin anywhere and often widely interrupted between the arcuate fascia and the humeral vein.

g. The darker markings occupying one-half or more of the tegmina, normally and completely continuous in the middle half of the tegmina and usually broader than the pale interspaces . . . 12. *conspicuus*, Scudd.

gg. The darker markings occupying much less than one-half of the tegmina, broken or partially broken by the nervules into maculations in the middle of the tegmina and usually narrower than the pale interspaces . . . . . [13. *eremitus*, Scudd.]

ff. The transverse band of the anterior margin of the tegmina opposite the middle of the intercalary vein much, generally twice or more, broader than the others; the fuscous band of the hind wings moderately broad, reaching the margin over half its course and hardly or but slightly interrupted at the anal vein . . . . . 14. *pardalinus*, Sauss.

dd. Intercalary vein of the tegmina separated near its extremity from the median by a moderately wide space; markings of the tegmina often somewhat blurred or ill-defined, but sometimes perfectly sharp; transverse band of the wings generally narrowed somewhat at the anal vein, but less noticeably than in the alternative category and never obsolescent; process of the metazona normally rectangulate.

e. The fuscous markings of the apical half of the tegmina hardly occupying so much as half the space, arranged in generally transverse, well-defined blotches, rarely so long as half the breadth of the tegmina.

f. Rugosities of the dorsum of the pronotum irregularly distributed; median carina of the metazona but slightly elevated, scarcely arched; the transverse fuscous bars of the tegmina with tolerably regular, rounded, and sharply limited outlines; hind femora distinctly and very obliquely barred exteriorly . . 15. *maculatus*, Scudd.

ff. Rugosities of the dorsum of the pronotum more or less distinctly ranged into series parallel to the two sides of the process; median carina of the metazona considerably elevated, distinctly arched; the transverse fuscous bars of the tegmina scarcely rounded,

with ill-defined, irregular margin on the apical half; hind femora not or obscurely barred exteriorly . . . . . [16. *tigrinus*, Scudd.]

ee. The fuscous markings of the apical half of the tegmina occupying fully three-fourths its area, arranged in well-defined transverse bars nearly or quite crossing the tegmina.

f. Dorsum of the prothorax with very prominent, often sharp, rugosities; the fuscous band of the wings very broad, not at all narrowed at the anal vein . [17. *leprosus*, Sauss.]

ff. Dorsum of the prothorax with less prominent, though coarse, dull rugosities; the fuscous band of the wing narrow, or if of medium width then distinctly and considerably narrowed at the anal vein . . . [18. *paradoxus*, Thom.]

eee. The fuscous markings of the apical half of the tegmina irregularly maculate with a tendency to a transverse arrangement, but with ill-defined very irregular margins, and occupying perhaps half the whole area.

f. Dorsum of the prothorax more heavily and coarsely rugulose; tegmina relatively long, distinctly surpassing the abdomen in the ♀; the darker tints of the tegmina generally prevailing over the lighter, particularly in the middle of the tegmina; the fuscous band of the wings relatively broad . . . [19. *affrictus*, Scudd.]

ff. Dorsum of the prothorax less heavily and coarsely rugulose; tegmina relatively short, not surpassing the abdomen in the ♀; the darker tints of the tegmina subordinate to the lighter, particularly in the middle of the tegmina; the fuscous band of the wings relatively narrow . . . . . 20. *toltecus*, Sauss.

cc. ♂ of small size. Tegmina of the ♀ shorter than the abdomen; area of the ulnar fork rarely filled with more than a single row of cells and then only for a portion of its length. Metazona plane above, with obscure or no indentation anteriorly. Shoulder of the tegmina with paler markings contrasting with the rest of the dark base; all the markings of the tegmina sharp and distinct.

d. Antennæ of the ♀ almost as long as the pronotum; pronotum of the ♀ nearly half as long again as its extreme dorsal width . . . . . [21. *cupidus*, Scudd.]

dd. Antennæ of the ♀ considerably shorter than the pronotum; pronotum of the ♀ but little longer than its extreme dorsal width . . . . . [22. *pumilus*, Scudd.]

bb. Antennæ of the ♂ distinctly shorter than the hind femora, apically attenuate for rarely more than one-eighth their

length, at most arcuate or broadly uncinate when dry. Tegmina rarely, though sometimes distinctly, pantherine, usually irregularly mottled with moderately large alternate blotches of dark fuscous and grey, and apically dotted with pale fuscous; intercalary vein usually straight, rarely approaching the median much nearer at its apex than next its base, never more than twice as close. The fuscous transverse band of the wings so near the apex that even in the ♀ rarely more than two marginal lobes are covered by the sometimes apically infuscated vitreous area. Pronotal carina sometimes scarcely subdued between the principal sulci. Summit of the cranium rarely carinate between the eyes.

c. Median carina of the pronotum usually almost entirely obliterated between the principal sulci; markings of the tegmina distinctly pantherine, mostly confined to the anterior half or three-fifths; apex of the axillary field pallid; the fuscous band of the wings somewhat obscure, very narrow, narrowed at the anal vein; inferior carina of the hind femora high and strongly arcuate; hind tibiæ yellow . . . . . [23. *albulus,* Scudd.]

cc. Median carina of the pronotum usually distinct between the anterior and principal sulci; markings of the tegmina not pantherine, but more or less marmorate, much as in *Trimerotropis,* rather generally distributed; inferior carina of the hind femora usually normal, rarely high or strongly arcuate.

d. Lateral lobes of the pronotum slightly wider below than in the middle by the retro-arcuate curve of the hind margin; inferior carina of the hind femora not especially prominent. Band of the hind wings rather broad and continuing to the anal angle . . . . . 24. *neglectus,* Thom.

dd. Lateral lobes of the pronotum equal, the hind margin vertical and not retro-arcuate; inferior carina of hind femora more or less prominent. Band of the hind wings variable.

e. Size small; general colour brown. Wing-band inconspicuous and pale fuscous, not following the hind border to the anal angle, the entire apex of the wing dusky from the heavy infuscation of all the veins. Hind femora largely black internally . . . . . 25. *australis,* sp. n.

ee. Size large; general colour cinereous. Wing-band rather conspicuous, broad, black, and following the hind border to the anal angle; apex vitreous. Hind femora bright red internally . . . . . 26. *montanus,* Thom.

1. **Hippiscus phœnicopterus,** Germ.

Œdipoda phœnicoptera, Germ. in Burm. Handb. Ent. ii. p. 643 (1838) [1].

Hippiscus phœnicopterus, Sauss. Prodr. Œdip. p. 87 (1884) [2]; Scudd. Psyche, vi. pp. 267, 274, 285 (1892) [3].

Œdipoda discoides, Serv. Hist. Nat. Orthopt. p. 724 (1839) [4]; Scudd: Bost. Journ. Nat. Hist. vii. p. 469 (1862) [5]; Glover, Illustr. N. Am. Ent., Orthopt. t. 3. figs. 3, 7 (1872) [6]; Thomas, Syn. N. Am. Acrid. pp. 133–135 (1873) [7].

Hippiscus discoideus, Stål, Recens. Orthopt. i. p. 121 (1873) [8]; Thomas, Bull. Illinois Mus. Nat. Hist. i. p. 66 (1876) [9]; Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 89 (1877) [10].

Hab. North America, from Texas and Florida north to Nebraska and Pennsylvania [1–10].

This insect most certainly extends to the Mexican territory across the Rio Grande.

[2. **Hippiscus pantherinus,** Scudd.

Hippiscus pantherinus, Scudd. Psyche, vi. p. 285 (1892) [1].

Hab. North America, Pecos River, Texas [1].]

[3. **Hippiscus haldemani,** Scudd.

Œdipoda haldemanii, Scudd. Rep. U.S. Geol. Surv. Nebr. p. 251 (1871) [1]; Glover, Illustr. N. Am. Ent., Orthopt. t. 13. fig. 3 (1872) [2].

Hippiscus haldemanii, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 264 (1876) [3].

Œdipoda paradoxa, Glover (nec Thomas), Illustr. N. Am. Ins., Orthopt. t. 18. fig. 14 (1874) [4].

Hippiscus nanus, Sauss. Prodr. Œdip. pp. 86–87 (1884) [5].

Hippiscus tuberculatus, McNeill, Psyche, vi. p. 63 (1891) [6].

Œdipoda neglecta, Thomas, Key Illinois Orthopt. p. 3 (1875) [7]; Bull. Illinois Mus. Nat. Hist. i. p. 64 (not *Œ. neglecta,* Thomas, Proc. Acad. Nat. Sci. Philad. 1870, pp. 81–82) [8].

Hab. North America, interior, from Texas to Northern Nebraska, and perhaps also into Mexican territory [1–8].]

4. **Hippiscus texanus,** Scudd.

Hippiscus texanus, Scudd. Psyche, vi. pp. 286–287 (1892) [1].

Hab. North America, Dallas and San Antonio, Texas [1].

As this insect seems to be a southern species, it no doubt belongs also to the Mexican regions bordering the Rio Grande.

[5. **Hippiscus rugosus,** Scudd.

Œdipoda rugosa, Scudd. Bost. Journ. Nat. Hist. vii. p. 469 (1862) [1]; Walk. Cat. Derm. Salt. Brit. Mus. iv. p. 731 (1870) [2]; Thomas, Syn. Acrid. N. Am. pp. 132–133 (1873) [3].

Hippiscus rugosus, Scudd. Rep. Geol. N. Hamp. i. p. 377 (1874) [4]; Psyche, vi. pp. 287, 288 (1892) [5]; Cat. U.S. Orthopt. p. 33 (1900) [6]; Sauss. Prodr. Œdip. p. 85 (1884) [7].

Hippiscus corallipes, var. *rugosus,* Thomas, Rep. Ent. Illinois, ix. pp. 95, 115, 116 (1880) [8].

Hab. NORTH AMERICA, San Antonio, Texas, to Montana and eastward to the New England States [1–7].

H. rugosus is said by Scudder to be a southern insect. It very likely occurs also in Mexico, but we have no specimens or records from there.]

6. **Hippiscus ocelote,** Sauss.

Œdipoda (*Hippiscus*) *ocelote,* Sauss. Rev. et Mag. Zool. (2) xiii. pp. 398, 399 (1861) [1]; Orthopt. Nov. Amer. ii. pp. 29, 30 (1861) [2].

Hippiscus ocelote, Thomas, Syn. Acrid. N. Am. pp. 200, 201 (1873) [3]; Sauss. Prodr. Œdip. pp. 84, 85 (1884) [4]; Addit. Prodr. Œdip. pp. 26, 27 (1888) [5]; Scudd. Psyche, vi. p. 302 (1892) [6].

Hab. MEXICO, Cordova, Guanajuato (*Saussure* [4 5]), Guadalajara (*Jas. A. G. Rehn*), Tepic (*coll. Calif. Acad. Nat. Sci.*).

This species is closely related to the preceding. The specimens examined show considerable variation in size and mottling.

7. **Hippiscus saussurei,** Scudd.

Œdipoda haldemanii, Thomas (in part.), Syn. Acrid. N. Am. pp. 130–132 (1873) [1].

Hippiscus haldemanii, Sauss. (in part.) Prodr. Œdip. pp. 85, 86 (1884) [2].

Hippiscus saussurei, Scudd. Psyche, vi. pp. 268, 302 (1892) [3].

Hab. NORTH AMERICA, various localities in Texas [1 2 3].

This large insect seems to be southern in its distribution. The specimens before me are from the vicinity of San Antonio. It most certainly occurs within Mexican territory also.

8. **Hippiscus tuberculatus,** Palis. de Beauv.

Acridium tuberculatum, Pal. de Beauv. Ins. Afr. et Amér. p. 145, t. 4. fig. 1 (1817) [1].

Locusta tuberculata, Harr. Cat. Ins. Mass. p. 56 (1835) [2].

Hippiscus tuberculatus, Sauss. Prodr. Œdip. pp. 87, 88 (1884) [3]; Addit. Prodr. Œdip. p. 27 (1888) [4]; Scudd. Psyche, vi. pp. 303–304 (1892) [5]; Cat. Orthopt. U.S. p. 33 (1900) [6].

Locusta apiculata, Say, MSS. in Harr. Cat. Ins. Mass. p. 56 (1835) [7].

Œdipoda obliterata, Germ. in Burm. Handb. Ent. ii. p. 643 (1838) [8].

Locusta corallina, Harr. Rep. Ins. Inj. Veg. 3rd ed. p. 176 (1862) [9].

Œdipoda phœnicoptera, Scudd. Bost. Journ. Nat. Hist. vii. pp. 468, 469 (1862) (nec Germ.) [10]; Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 730 (1870) [11].

Hipppiscus phœnicopterus, Scudd. Rep. Geol. N. Hamp. i. p. 377 (1874) [12]; Rep. Brit. N. Am. Bound. Comm. p. 344 (1875) [13].

Œdipoda pulchripennis, Blanch. MSS.[14].

Hab. NORTH AMERICA [1–13], Central United States east of the Great Plains, becoming rare southwards.—MEXICO, Oaxaca [11].

This is one of the most widely distributed species of the genus, and, as Scudder says, it is variable in its markings.

[9. **Hippiscus californicus,** Scudd.

Hippiscus (*Sticthippus*) *californicus,* Scudd. Psyche, vi. pp. 269, 317–318 (1892) [1]; Cat. Orthopt. U.S. p. 33 (1900) [2].

Hab. North America, Gilroy, Santa Clara county, California [1], San Diego (*A. J. Cook*).

The specimen found by Mr. Cook comes from near the Mexican border. It is much smaller than the insect described by Scudder, but does not appear to be distinct from *H. californicus.*]

10. **Hippiscus corallipes,** Hald.

Œdipoda corallipes, Hald. in Stansb. Expl. Utah, p. 371, t. 10. fig. 2 (1852) [1]; Thomas, Acrid. N. Am. p. 130 (1873) [2]; Rep. U.S. Geol. & Geogr. Surv. W. 100th Merid. v. p. 879 (1875) [3].

Hippiscus corallipes, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 264 (1876) [4]; Rep. U.S. Ent. Comm. ii., Append. 2, p. 26 (1881) [5]; Thomas, Rep. Ent. Illinois, ix. pp. 95, 115, 116 (1880) [6]; Scudd. Psyche, vi. pp. 318, 319 (1892) [7].

Xanthippus corallipes, Sauss. Prodr. Œdip. p. 90 (1884) [8].

Hab. North America [1–8], Texas, New Mexico, and Arizona, El Paso (*L. Bruner*).

While there are no records of this species from south of the international boundary-line, there can be but little doubt of its occurrence in Mexican territory.

11. **Hippiscus zapotecus,** Sauss.

Xanthippus zapotecus, Sauss. Prodr. Œdip. p. 91 (1884) [1].

Hippiscus zapotecus, Scudd. Psyche, vi. pp. 270, 319 (1892) [2]; Cat. Orthopt. U.S. p. 35 (1900) [3].

Hab. North America, Iowa to New Mexico and California [2].—Mexico (*Saussure* [1]), Guadalajara, Jalisco (*Jas. A. G. Rehn*).

Although this is a very common species on the tablelands of Central and Northern Mexico, it is not represented in any of the collections at hand.

12. **Hippiscus conspicuus,** Scudd.

Hippiscus conspicuus, Scudd. Psyche, vi. pp. 271, 319, 320 (1892) [1]; Cat. Orthopt. U.S. p. 34 (1900) [2].

Hab. North America, Kansas and New Mexico [1 2].—Mexico, Montezuma, Chihuahua (*C. H. T. Townsend*).

A single male of this species was captured by Mr. Townsend at Montezuma in

May 1893. It should occur in other portions of Northern Chihuahua and also in Sonora.

[13. **Hippiscus eremitus,** Scudd.

Hippiscus eremitus, Scudd. Psyche, vi. pp. 271, 320, 333 (1892) [1]; Cat. Orthopt. U.S. p. 34 (1900) [2].

Hab. North America [1 2], Arizona (*coll. L. Bruner*).

While but a single specimen of this insect is at hand, it appears to belong to an arid region and is quite likely to occur in Mexico.]

14. **Hippiscus pardalinus,** Sauss.

Œdipoda pardalina, Sauss. Rev. et Mag. Zool. (2) xiii. p. 324 (1861) [1]; Orthopt. Nov. Am. ii. p. 27 (1861) [2]; Thomas, Syn. Acrid. N. Am. pp. 213, 214 (1873) [3].

Xanthippus pardalinus, Sauss. Prodr. Œdip. pp. 90, 91 (1884) [4].

Hippiscus pardalinus, Scudd. Psyche, vi. pp. 271, 333 (1892) [5]; Cat. Orthopt. U.S. p. 35 (1900) [6].

Hab. North America, California, Nevada, Utah, New Mexico [5 6].—Mexico (*Saussure* [1–5]), Ciudad in Durango (*Forrer*), Vera Cruz and Tlalpam (*L. Bruner*), Jalisco (*Mus. Tacubaya*).—Venezuela; Antilles.

15. **Hippiscus maculatus,** Scudd.

Hippiscus maculatus, Scudd. Psyche, vi. pp. 271, 234 (1892) [1]; Cat. Orthopt. U.S. p. 34 (1900) [2].

Hab. North America, Colorado and Arizona [1].—Mexico, San Luis Potosi (*Palmer*: ♀).

[16. **Hippiscus tigrinus,** Scudd.

Hippiscus tigrinus, Scudd. Psyche, vi. pp. 274, 334 (1892) [1]; Cat. Orthopt. U.S. p. 35 (1900) [2].

Hab. North America, Nebraska to Arizona [1].

This insect will very likely be found to occur within Mexican territory.]

[17. **Hippiscus leprosus,** Sauss.

Xanthippus leprosus, Sauss. Prodr. Œdip. p. 92 (1884) [1].

Hippiscus leprosus, Scudd. Psyche, vi. pp. 271, 334 (1892) [2].

Hab. North America, New Mexico (*Saussure* [1]), Reno, Nevada (*Scudder* [2]).

Like many other species of the genus, this locust evidently enjoys a wide distribution and may therefore occur a little further to the southward of the locality given by Saussure.]

[18. **Hippiscus paradoxus,** Thomas.

Œdipoda paradoxa, Thomas, Ann. Rep. U.S. Geol. Surv. v. p. 457 (1872) [1]; Syn. Acrid. N. Am. p. 132 (1873) [2]; Glover, Illustr. N. Am. Ent., Orthopt. t. 18. fig. 14 (1874) [3].

Hippiscus paradoxus, Scudd. Psyche, vi. pp. 271, 335, 336 (1892) [4]; Cat. U.S. Orthopt. p. 35 (1900) [5].

Hab. North America, Idaho and Nebraska to Arizona and New Mexico [1–5].]

[19. **Hippiscus affrictus,** Scudd.

Hippiscus affrictus, Scudd. Psyche, vi. pp. 272, 336, 337 (1892) [1]; Cat. U.S. Orthopt. p. 34 (1900) [2].

Hab. North America, Yuma, Arizona (*H. F. Wickham*), Colorado, Dakota, and Nevada (*Scudder* [1 2]).]

20. **Hippiscus toltecus,** Sauss.

Xanthippus toltecus, Sauss. Prodr. Œdip. pp. 91, 92 (1884) [1].

Hippiscus toltecus, Scudd. Psyche, vi. pp. 272, 347 (1892) [2]; Cat. U.S. Orthopt. p. 35 (1900) [3].

Hab. North America, Utah, Wyoming, and Montana [1–3].—Mexico (*Saussure* [1]).

[21. **Hippiscus cupidus,** Scudd.

Hippiscus cupidus, Scudd. Psyche, vi. pp. 272, 348, 349 (1892) [1]; Cat. U.S. Orthopt. p. 34 (1900) [2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1894, p. 566 [3].

Hab. North America, Jerome and Prescot, Arizona (*Oslar* [3]), Arizona and Colorado (*Scudder* [1 2]).]

[22. **Hippiscus pumilus,** Scudd.

Hippiscus pumilus, Scudd. Psyche, vi. pp. 272, 349, 350 (1892) [1]; Cat. Orthopt. U.S. p. 35 (1900) [2].

Hab. North America, Colorado, New Mexico, and Arizona [1 2].

Both the present and the preceding species are mountain forms and usually occur at high altitudes. They may be looked for in the mountain districts of Northern Mexico.]

[23. **Hippiscus albulus,** Scudd.

Hippiscus albulus, Scudd. Psyche, vi. pp. 273, 350, 359 (1892) [1]; Cat. U.S. Orthopt. p. 34 (1900) [2].

Hab. North America, Prescott Mts., Arizona (*Palmer* [1]).]

24. **Hippiscus neglectus,** Thomas.

Œdipoda neglecta, Thomas, Proc. Acad. Nat. Sci. Philad. 1870, pp. 81, 82 [1]; Rep. U.S. Geol. Surv. Wyom. pp. 276, 277 (1871) [2]; Syn. Acrid. N. Am. pp. 128, 129 (1873) [3]; Rep. U.S. Geol. Surv. W. 100th Merid. v. pp. 881, 882, t. 44. fig. 3 (1875) [4].

Arphia neglecta, Thomas, Proc. Dav. Acad. Nat. Sci. i. p. 254 (1876) [5]; Ann. Rep. Chief Eng. 1878, p. 1844 [6].

Hippiscus neglectus, Scudd. Bull. U.S. Geol. Surv. ii. p. 264 (1876) [7]; Thomas, Rep. Ent. Illinois ix. pp. 114, 115 (1880) [8]; Scudd. Psyche, vi. pp. 273, 360, 361 (1892) [9].

Xanthippus neglectus, Sauss. Prodr. Œdip. pp. 94, 95 (1884) [10]; McNeill, Psyche, vi. pp. 63, 64 (1891) [11].

Cratypedes putnami, Thomas, Proc. Dav. Acad. Nat. Sci. i. pp. 257, 258, t. 36. fig. 6 (1876) [12]; Rep. U.S. Ent. Com. ii. p. 259 (1881) [13].

Hippiscus lineatus, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 31 (1877) [14]; Sauss. Prodr. Œdip. p. 87 (1884) [15].

[Nec *Œ. neglecta*, Thomas, Key Illinois Orthopt. p. 3, and Bull. Illinois Mus. Nat. Hist. i. p. 64 (1876).]

Hab. North America, Rocky Mountain region from the high north, south into Arizona and New Mexico [1–14], also in the mountain regions near the Pacific (*Scudder* [9]).

This is one of the most variable, and also the most widely distributed, species of the genus. It is readily recognized from the nearly related forms by the retro-arcuate posterior lateral margins of the pronotum. It most assuredly will be met with in the mountain districts of Durango and Chihuahua in Mexico.

25. **Hippiscus australis**, sp. n.

? *Trimerotropis monticola*, Rehn, Trans. Am. Ent. Soc. xxvii. p. 97 (1900) [1].

? *Trimerotropis fascicula*, Rehn, loc. cit. p. 227 [2].

Size small; general colour dull brown, inconspicuously marked with fuscous on the tegmina and hind femora; in general appearance resembling at first sight a short-winged, rather robust, medium-sized *Trimerotropis*, but differing from the species of that genus in the shape of the scutellum of the vertex, the very much rougher pronotum, and the dissimilarly coloured wings. Related to *H. neglectus*, but with the median carina of the pronotum very decidedly trilobed, and the hind margin of the lateral lobe vertical, instead of retro-arcuate; while in the two pairs at hand there is no sign of the pale line so common on the humeral angle of the tegmina of *H. neglectus*.

Vertex of moderate width, about as broad as the shorter (♂) or longer (♀) diameter of one of the eyes, the bounding-walls fairly conspicuous and strongly converging towards the occiput, where they approach to within a distance equal to one-half the longest width of the sulcus; separated in front from the upper edge of the frontal costa by a fairly large, deep, transverse pit; the lateral foveolæ subtriangular, rather deep; frontal costa prominent and strongly sulcate, especially in the vicinity of the ocellus; antennæ normal, a little longer than (♂) or about equalling (♀) the combined length of the head and pronotum. Pronotum with a moderately coarse, but not very high, median carina, which is strongly trilobed, the anterior portion being much the more prominent; disc and hind part of the lateral lobes somewhat coarsely rugose or tuberculate, the tubercles arranged in longitudinal series on the former, the hind edge slightly acute-angled. Tegmina and wings rather narrow, extending beyond the tip of the hind femora and abdomen in both sexes; the intercalary vein not at all prominent, situated closer than usual to the median vein. Hind femora rather robust, especially on the basal half, the lower carina quite prominent on this portion.

General colour dull brown, inconspicuously marked upon the tegmina and hind femora with fuscous; upon the former these darker markings tend towards gathering into basal, median, and subapical patches, somewhat similarly to the pattern of markings in certain forms of *H. neglectus* and some of the species of *Trimerotropis*. Wings with the disc pale yellow, the outer two-fifths and the greater part of the anterior field

fuliginous, or with all the veins obscure. Hind femora not banded externally, but marked internally and below as in *H. neglectus*. ♂ abdomen bright ferruginous. Hind tibiæ red.

Length of body, ♂ 16, ♀ 25; of antennæ, ♂ 9, ♀ 8; of pronotum, ♂ 4, ♀ 5·5; of tegmina, ♂ 18, ♀ 22; of hind femora, ♂ 10, ♀ 14 millim.

Hab. MEXICO, Eslava, Jalapa (*O. W. Barrett*: ♂ ♀), Amecameca (*C. C. Deam*: ♀).

This may be the insect referred to by Rehn as *Trimerotropis monticola* (Trans. Am. Ent. Soc. xxvii. p. 97) and again as *T. fascicula* (*l. c.* p. 227).

26. **Hippiscus montanus,** Thomas.

Œdipoda montana, Thomas, Rep. U.S. Geol. Surv. Terr. v. pp. 462, 463 (1872)[1]; Syn. Acrid. N. Am. pp. 129, 130 (1873)[2]; Glover, Illustr. N. Am. Ent., Orthopt. t. 12. fig. 12 (1872)[3].

Hippiscus montanus, Bruner, Canad. Ent. xvii. p. 12 (1885)[4]; Sauss. Addit. Prodr. Œdip. p. 170 (1888)[5]; Scudd. Psyche, vi. pp. 273, 361 (1892)[6]; Cat. U.S. Orthopt. p. 35 (1900)[7].

Hab. NORTH AMERICA, from north of the United States frontier to Arizona and New Mexico [1–7].

This species, although it occurs over a wide range, is local in its distribution. So far as the writer knows, *H. montanus* frequents sandy localities. It certainly reaches Mexican territory.

LEPRUS, Sauss.

Leprus, Saussure, Rev. et Mag. Zool. (2) xiii. p. 398 (1861); Prodr. Œdip. p. 96 (1884); Scudder, Psyche, ii. p. 75 (1900); Cockerell, Ent. News, xiii. pp. 305–307 (1902).

This genus of locusts belongs to the austral region of North America, where its representatives appear to be confined to mountainous regions and to rocky slopes on which the vegetation is not too dense. While the individuals vary somewhat among themselves, in both wing-length and colour, they seem to separate easily into distinct species or at least into well-marked forms. Seven such are included here.

Table for separating the Species of Leprus.

A. Hind wings with the disc yellow.
  b. Form very robust.
    c. Larger: the pronotum decidedly verrucose or warty . . . . 1. *elephas,* Sauss.
    cc. Smaller: the pronotum granulose . . . . . 2. *corpulentus,* Sauss.
  bb. Form more slender.
    c. Size medium or small. (Pacific coast.) . . . . . [3. *intermedius,* Sauss.]
    cc. Very large. (New Mexico and Colorado.) . . . . . [4. *wheeleri,* Thomas.]
AA. Hind wings with the disc blue.
  b. The sexes more nearly equal in size; the tegmina rather regularly banded.
    c. Tegmina lighter, conspicuously banded and mottled to the apex. Posterior lobe of the pronotum only once and one-half the length of the anterior one . . . . . [5. *interior,* sp. n.]

cc. Tegmina always more dusky, with the light band opposite the black wing-band white or nearly so, the tegmen beyond this plain or feebly marked. Posterior lobe of the pronotum twice the length of the anterior one . . . . . 6. *cyaneus*, Ckll.

bb. The sexes decidedly very equal in size; the tegmina somewhat irregularly banded . . . . . 7. *glaucipennis*, Scudd.

1. **Leprus elephas**, Sauss.

Œdipoda (*Leprus*) *elephas*, Sauss. Rev. et Mag. Zool. (2) xiii. p. 398 (1861)[1]; Orthopt. Nov. Am. ii. p. 28 (1861)[2].

Leprus elephas, Walk. Cat. Derm. Salt. Brit. Mus. iv. p. 795 (1870)[3]; Thomas, Syn. Acrid. N. Am. p. 219 (1873)[4]; Sauss. Prodr. Œdip. pp. 95, 96 (1884)[5]; Scudd. Psyche, ix. p. 75 (1900)[6]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 525[7].

Leprus corpulentus, Scudd. Cat. U.S. Orthopt. p. 36 (1900)[8].

Hab. North America, Texas[6 7].—Mexico (*Saussure*[1 2 5]), Sonora, San Luis Potosi, &c. (*Scudder*, *Rehn*[6 7]).

I have separated *L. elephas* and *L. corpulentus*, notwithstanding that they were united by Scudder.

2. **Leprus corpulentus**, Sauss.

Leprus corpulentus, Sauss. Prodr. Œdip. pp. 95, 96 (1884)[1]; Addit. Prodr. Œdip. p. 29 (1888)[2]; Scudd. Cat. Orthopt. U.S. p. 36 (1900)[3]; Psyche, ix. p. 75 (1900)[4].

Leprus elephas, Scudd. Psyche, ix. p. 75 (1900) (in part.)[5].

Hab. North America, Texas and Arizona[2 5].—Mexico (*Saussure*[1], *coll. U.S. Nat. Mus.*).

Scudder, in writing of what he calls *L. elephas*, says: "the small female (a single specimen) coming from Arizona . . . ." This particular specimen, with the tegmina 26 millim. in length, would refer to the present species.

[3. **Leprus intermedius**, Sauss.

Leprus intermedius, Sauss. Prodr. Œdip. p. 96 (1884)[1]; Scudd. Cat. Orthopt. U.S. p. 36 (1900)[2]; Psyche, ix. p. 75 (1900)[3].

Hab. North America, British Columbia[3], California[1 2 3].]

[4. **Leprus wheeleri**, Thomas.

Œdipoda wheeleri, Thomas, Rep. U.S. Geol. Surv. W. 100th Merid. v. p. 879, t. 44. fig. 1 (1875)[1].

Leprus wheeleri, Sauss. Addit. Prodr. Œdip. p. 169 (1888)[2]; Cockerell, Ent. News, xiii. pp. 305–307 (1902)[3]; Caudell, Proc. U.S. Nat. Mus. xxvi. p. 788 (1903)[4].

Leprus wheeleri (in part.), Bruner, Science, xxi. p. 133 (1893)[5]; Scudd. Cat. Orthopt. U.S. p. 36 (1900)[6]; Psyche, ix. pp. 75, 76 (1900)[7].

Hab. North America, Colorado and New Mexico[1–7].

This form seems to be rather restricted in its distribution.]

[5. **Leprus interior,** sp. n.

Leprus wheeleri (in part.), Bruner, Science, xxi. p. 133 (1893) [1]; Scudd. Cat. Orthopt. U.S. p. 36 (1900) [2]; Psyche, ix. pp. 75, 76 (1900) [3].

As indicated in the table separating the species, the present insect comes closest to *L. cyaneus*, Cocker., but differs from it in the much more slender hind femora, the relatively smoother head and pronotum, and the shorter and more slender antennæ, in addition to the characters there given. In colour *L. interior* is pale cinereous above and testaceous beneath. In some specimens there is a faint tinge of ferruginous about the pronotum and the base of the tegmina. The hind tibiæ are pale glaucous, with a rather broad basal pale portion. The hind femora show traces of a subapical dusky band externally, and the usual black bands and the bluish tinge to the lower sulcus.

Length of body, ♂ 27, ♀ 36; of pronotum, ♂ 6·5, ♀ 8; of tegmina, ♂ 29, ♀ 30; of hind femora, ♂ 15, ♀ 17 millim.

Hab. NORTH AMERICA, Salt Lake Valley, Utah (*colls. L. Bruner & U.S. Nat. Mus.*).

This beautiful locust is to be met with on the bench-lands at an altitude of 300 to 500 feet above the present water-level of the Great Salt Lake. It occurs on both the eastern and western shores. The Nevada reference given by Scudder evidently refers to this species.]

6. **Leprus cyaneus,** Cockerell.

Leprus cyaneus, Cocker. Ent. News, xiii. pp. 305, 306 (1902) [1]; Caudell, Proc. U.S. Nat. Mus. xxvi. p. 788 (1903) [2].

Leprus wheeleri, Towns. Ins. Life, vi. p. 31 (1893) [3].

Leprus wheeleri (in part.), Scudd. Cat. Orthopt. U.S. p. 36 (1900) [4]; Psyche, ix. pp. 75, 76 (1900) [5].

Hab. NORTH AMERICA, Colorado and New Mexico [1–5] (*Gillette, Scudder*), Salida (*A. N. Caudell*), Texas (*H. F. Wickham*).

As this insect is common in the vicinity of Mesilla, New Mexico, it will undoubtedly be found to occur also in the mountains of Northern Chihuahua.

7. **Leprus glaucipennis,** Scudd.

Leprus glaucipennis, Scudd. Psyche, ix. pp. 75, 76 (1900) [1]; Cocker. Ent. News, xiii. p. 307 (1902) [2].

Hab. NORTH AMERICA, California [1 2].—MEXICO, Durango and San Luis (*Scudder* [1]), Hermosilla, Sonora (*A. Koebele*).

As indicated in the table, this species shows much inequality in size between the sexes. It also shows great variation in the comparative rugosity of the pronotum.

[AGYMNASTUS, Scudd.

Leprus (in part.), Scudder, Proc. Bost. Soc. Nat. Hist. xix. p. 32 (1877).
Agymnastus, Scudder, Canad. Ent. xxix. p. 75 (1897).

While the present genus is not represented in the collections before me nor recorded as having been found within Mexican territory, it belongs to the same faunal area. A single species only has been described.

1. **Agymnastus ingens,** Scudd.

Leprus ingens, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 32 (1877) [1].
Agymnastus ingens, Scudd. Canad. Ent. xxix. p. 75 (1897) [2].

Hab. North America, Middle California [1 2].

The sexes of this peculiar insect differ greatly in appearance. The male reminds one strongly of *Hippiscus neglectus* and two or three of its immediate allies, while the female with the very robust body and short wings inclines one at first glance to associate it with the Eremobiini.]

TROPIDOLOPHUS, Thomas.

Gryllus, Say, Amer. Ent. iii. t. 34 (1828) (nec Linnæus).
Tropidolophus, Thomas, Rep. Acrid. N. Amer. (U.S. Geol. Surv. v.) p. 138, tab. fig. 1 (1873).

This remarkable genus of locusts is monotypic, and in its distribution seems to be confined to the plains of Northern Mexico and portions of the South-western United States.

1. **Tropidolophus formosus,** Say.

Gryllus formosus, Say, Amer. Ent. (ed. Le Conte) i. p. 78, t. 34. fig. 8 (1859) [1]; Thomas, Ann. Rep. U.S. Geol. Surv. Terr. ii. p. 266 (1871) [2]; Glover, Illustr. Am. Ent., Orthopt. t. 9. fig. 5 (1872) [3].
Tropidolophus formosus, Thomas, Acrid. N. Am. pp. 138, 139, tab. fig. 1 (1873) [4]; Sauss. Prodr. Œdip. p. 104 (1884) [5].

Hab. North America, Arizona (*Lemmon*), New Mexico and northward to Colorado and Nebraska [1–5].—Mexico, Mazatlan (*coll. Chicago Acad. Sci.*), Casas Grandes, Chihuahua (*Dr. W. E. Hughes*).

This is one of the interesting species of N.-American locusts, nowhere abundant, but widely distributed. The insect lives on the high prairies, where it is to be met with among the short grasses, usually of the genus *Bouteloua.*

DISSOSTEIRA, Scudder *.

Œdipoda, Latreille, Fam. Nat. Règne Anim. (1825) et auctt. (in part.).
Dissosteira, Scudder, Rep. Chief Eng. 1876, Append. JJ, p. 511; Saussure, Prodr. Œdip. p. 134 (1884).

A characteristic North-American genus composed of comparatively few species with well-marked characters. Some of the representatives enjoy a wide distribution.

* *Dissosteira* and the following four genera seem to be rather more closely related than usual and may only form well-marked sections in a rather variable and diversified section of the subfamily. Be this as it may, the names are employed separately here. No doubt another genus should be added to include *D. venusta*, *D. pictipennis*, and *D. planipennis*, since all three of them are remarkably different from *D. carolina*, *D. longipennis*, and *D. spurcata*. They are likewise just as distinct from *Spharagemon*, which follows.

Table for separating the Species of Dissosteira.

A. Larger species. Tegmina and wings much longer than the body in both sexes.
  b. Wings with the disc largely fuliginous; the outer border pale.
    c. Tegmina not distinctly marmorate. The pronotal crest of moderate height . . . . . 1. *carolina*, Linn.
    cc. Tegmina very conspicuously marmorate. The pronotal crest higher . . . . . 2. *longipennis*, Thom.
  bb. Wings scarcely, if at all, fuliginous . . . . . [3. *spurcata*, Sauss.]
AA. Smaller species. Tegmina and wings but little longer than the body in either sex.
  b. Wings with the disc some shade of red, crossed by a well-defined fuliginous band.
    c. Larger. Ground-colour inclining to ferruginous. The wing-band fenestrate with light and dark . . . . . [4. *venusta*, Stål.]
    cc. Smaller. Ground-colour plain grey. The dusky wing-band of a uniform colour . . . . . [5. *pictipennis*, sp. n.]
  bb. Wings almost wholly hyaline or vitreous . . . . . [6. *planipennis*, sp. n.]

1. **Dissosteira carolina**, Linn.

Gryllus (*Locusta*) *carolinus*, Linn. Syst. Nat. 10th ed. i. p. 433 (1758) [1].
Acrydium carolinum, De Geer, Mém. Ins. iii. p. 491, t. 47. figg. 2, 3 (1773) [2].
Gryllus carolinus, Fabr. Syst. Ent. p. 291 (1775) [3].
Locusta carolina, Harr. in Hitchc. Rep. Geol. Mass. p. 583 (1833) [4].
Œdipoda carolina, Burm. Handb. Ent. ii. p. 643 (1838) [5].
Dissosteira carolina, Scudd. Rep. Chief Eng. 1876, Append. JJ, p. 511 (1876) [6]; Cat. N.-Am. Orthopt. i. p. 36 (1900) [7]; Sauss. Prodr. Œdip. p. 137 (1884) [8].
Œdipoda (*Dissosteira*) *carolina*, Prov. Faune ent. Canad. ii. p. 39 (1887) [9].
Œdipoda (*Hippiscus*) *carolina*, Caulf. Canad. Orthopt. pp. 12, 13 (1887) [10].
Dissosteira (*Œdipoda*) *carolina*, Towns. Proc. Ent. Soc. Wash. i. pp. 266, 267 (1890) [11].
Locusta caroliniana, Catesby, Nat. Hist. Carol. &c. ii. p. 89, t. 89 (1743) [12].

Hab. North America, generally from ocean to ocean [1–12].—Mexico, Northern Chihuahua (*L. Bruner*).

It is surprising that this species, which is so generally distributed over the adjoining portions of Texas, New Mexico, Arizona, and California, has been overlooked by collectors in Mexico. During the fall of 1887 (November) the present writer saw it along the Mexican Central Railroad just south of El Paso, Texas.

2. **Dissosteira longipennis**, Thomas.

Œdipoda longipennis, Thom. Rep. U.S. Geol. Surv. Terr. v. p. 463 (1872) [1]; Acrid. N. Am. p. 116 (1873) [2].

Dissosteira longipennis, Scudd. Ann. Rep. Chief Eng. 1876, p. 511 [3]; Cat. Orthopt. N. Am. p. 36 (1900) [4]; Sauss. Prodr. Œdip. p. 137 (1884) [5].
Œdipoda nebraskensis, Bruner, Canad. Ent. viii. p. 123 (1876) [6].

Hab. North America, Idaho and Montana to Texas and N. Mexico [1–6].

While no definite records, so far as I know, give this insect as belonging to Mexican territory, it most certainly occurs on the tablelands of Northern Chihuahua, Coahuila, and Sonora.

[3. **Dissosteira spurcata,** Sauss.

Dissosteira spurcata, Sauss. Prodr. Œdip. p. 137 (1884) [1]; Scudd. Cat. U.S. Orthopt. p. 37 (1900) [2].
Œdipoda obliterata, Thom. (nec Germ.), Canad. Ent. xii. pp. 221, 222 (1880) [3].

Hab. North America, Pacific region, Idaho to California [1–3].

While this insect has not been reported from any Mexican localities, it is likely to occur in Northern Sonora.]

[4. **Dissosteira venusta,** Stål.

Œdipoda venusta, Stål, Orthopt. Eug. Resa, p. 344 (1861) [1]; Bruner, Rep. U.S. Ent. Comm. iii. p. 57 (1883) [2].
Dissosteira (*Spharagemon*) *venusta,* Sauss. Prodr. Œdip. p. 138 (1884) [3].
Spharagemon venustum, Scudd. Cat. U.S. Orthopt. p. 37 (1900) [4]; Baker, Invert. Pacif. i. p. 76 (1905) [5].

Hab. North America, California [1–5]; Lower California (*Eisen, in coll. Calif. Acad. Sci.*).

This species, on account of its bright vermilion hind wings, is an aberrant form for both the present and the following genera. The colour-pattern of the tegmina would place it with the *Dissosteiræ* rather than in the genus *Spharagemon.*]

[5. **Dissosteira pictipennis,** sp. n.

A rather small and not very robust insect, having the anterior lobe of the pronotum much narrowed and its median carina well arched and fully twice as high as that on the posterior lobe; the disc is somewhat inflated and provided with rather coarse lateral carinæ anteriorly and lateral rugæ just in advance of the transverse sulcus which severs the median carina; anterior edge somewhat angulate, the posterior margin about a right-angle, the sides nearly twice as high as long, the lower edge oblique, with the posterior angle broadly rounded. Vertex deeply sulcate and provided with a strong median longitudinal carina, which extends across the occiput, and has at the anterior extremity a deep V-shaped depression. Tegmina of medium width, surpassing the abdomen about one-fourth of their length, the apex suboblique, the intercalary vein strong. Hind femora slender, reaching the apex of the abdomen. General colour pale ashy-brown, the tegmina marked with darker flecks, which congregate so as to form three or four narrow transverse patches. Wings with the disc pale vermilion, crossed just beyond their middle by a moderately wide, arcuate, fuliginous band, which follows the posterior margin to the anal angle and the front edge to the base, the outer portion vitreous. Hind femora obscurely fasciate; hind tibiæ pale plumbeous.

Length of body, ♀, 21; of pronotum 5, of tegmina 21, of hind femora 12·5 millim.

Hab. North America, California, probably in the vicinity of Indio (*coll. L. Bruner*).

A single female. This and several other interesting locusts are contained in a small collection of insects made by Mr. Leon La Forge between Yuma and Los Angeles. None of them bear definite locality-labels.]

[6. **Dissosteira planipennis,** sp. n.

In form and size very similar to the preceding species, but differing from it in the slightly smaller size, the less conspicuous longitudinal median carina of the vertex, and the lower median carina of the pronotum, and also in the absence of a transverse dusky band on the wings, where only a trace of the fuliginous colour is apparent along the anterior margin towards the base. The disc of the pronotum is coarsely granulose, and the sides are but little higher than long. The hind femora are slender and definitely banded, while the hind tibiæ are testaceous and rather more strongly spined and spurred than usual.

Length of body, ♀, 19; of pronotum 4·5, of tegmina 19, of hind femora 12 millim.

Hab. North America, Southern California, between San Diego and San Bernardino (*coll. L. Bruner*).

Taken by Mr. Leon at La Forge. The present species may be congeneric with the insect described by me as *Scirtetica occidentalis*, which is included in that genus as here treated. The only specimen of that species in collections, so far as known to the present writer, is the type which is in the U.S. National Museum in Washington.]

SPHARAGEMON, Scudder.

Gryllus, Say, Journ. Acad. Nat. Sci. Philad. iv. p. 307 (1825) (in part.).
Œdipoda, Latreille et auct. (in part.).
Spharagemon, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 468 (1875).
Dissosteira (*Spharagemon*), Saussure, Prodr. Œdip. p. 135 (1884).

The genus *Spharagemon* is confined to North and Central America, where about a dozen species occur. Some of these are distributed in arid localities, while others may be taken in rather humid regions. At least one half of them belong to the fauna of the region under consideration in the present paper. As will be seen by a reference to the following synoptic table, it is composed of species showing considerable variation among themselves.

Table for separating the Species of Spharagemon.

A. Carina of pronotum equally compressed throughout; the disc flat in longitudinal section. Hind tibiæ generally annulate with fuscous.
  b. Hind tibiæ plainly annulate with fuscous.
    c. Head and body somewhat compressed. Metazona less than twice as long as the prozona . . . . . 1. *bolli*, Scudd.
    cc. Head and body robust. Metazona more than twice as long as the prozona . . . . . 2. *robustum*, Morse.
  bb. Hind tibiæ very faintly, if at all, annulate with fuscous . . . [3. *inornatum*, Morse.]

AA. Carina of pronotum variable, unequally compressed; the disc not flat in longitudinal section.
b. Pronotum with its median carina not greatly elevated, yet distinctly carinate . . . . . 4. *æquale*, Say.
bb. Pronotum with its median carina cristate.
c. The crest greatly elevated, both sections arched . . . . . 5. *cristatum*, Scudd.
cc. The crest less strongly elevated, the anterior portion straight or sinuate . . . . . 6. *collare*, Scudd.

1. **Spharagemon bolli**, Scudd.

Spharagemon bolli, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 469 (1875) [1]; Morse, Psyche, vii. p. 290 (1895) [2].
Dissosteira (*Spharagemon*) *bollii*, Sauss. Prodr. Œdip. p. 140 (1884) [3].
Spharagemon balteatum, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 469 (1875) [4].

Hab. North America, South-western Texas [1–4].

Not contained in the material before me coming from Mexican territory. It most certainly occurs across the Rio Grande in the States of Coahuila and Nuevo Leon.

2. **Spharagemon robustum**, Morse.

Spharagemon robustum, Morse, Psyche, vii. p. 291 (1895) [1].

Hab. Mexico, Coahuila (*coll. S. H. Scudder*: 1 ♀ [1]).

Professor Morse says this may be an extremely large form of the preceding species (*loc. cit.*).

[3. **Spharagemon inornatum**, Morse.

Spharagemon inornatum, Morse, Psyche, vii. pp. 291 (1895) [1].

Hab. North America, Hot Springs, New Mexico (*coll. L. Bruner* [1]).

While no records of the presence of this insect in Mexican territory are at hand, the fact that it comes from the arid south-west would suggest that it is liable to be met with in suitable situations in Chihuahua as well.]

4. **Spharagemon æquale**, Say.

Gryllus æqualis, Say, Journ. Acad. Nat. Sci. Philad. iv. p. 307 (1825) [1].
Locusta æqualis, Harr. Cat. Ins. Mass. p. 56 (1835) [2].
Œdipoda æqualis, Uhler, in Harr. Ins. Inj. Veg. 3rd ed. p. 178 (1862) [3].
Trimerotropis æqualis, Scudd. in Hitchc. Rep. Geol. New Hampshire, i. p. 377 (1874) [4].
Spharagemon æquale, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 468 (1875) [5]; Morse, Psyche, vii. p. 291 (1895) [6].
Dissosteira (*Spharagemon*) *æqualis*, Sauss. Prodr. Œdip. pp. 139, 140 (1884) [7].
? *Œdipoda belfragei*, Stål, Recens. Orthopt. i. p. 129 (1873) [8].

Hab. NORTH AMERICA, east of the Rocky Mountains [1–8].—MEXICO, Coahuila and Chihuahua (*L. Bruner*).

If the synonymy of this species were carefully worked out it would no doubt embrace other references in addition to those here given (see Morse, *loc. cit.*).

5. **Spharagemon cristatum,** Scudd.

Spharagemon cristatum, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 470 (1875) [1]; Morse, Psyche, vii. p. 295 (1875) [2].

Dissosteira (*Spharagemon*) *cristata,* Sauss. Prodr. Œdip. pp. 138, 139 (1884) [3].

? *Dissosteira* (*Spharagemon*) *texensis,* Sauss. loc. cit. p. 140 [4].

Hab. NORTH AMERICA, Texas, Florida, N. Carolina [1–4].—MEXICO, La Joya, San Luis Potosi (*Jas. A. G. Rehn*).

This insect should also occur across the Rio Grande in both Coahuila and Nuevo Leon.

6. **Spharagemon collare,** Scudd.

Œdipoda collaris, Scudd. Rep. U.S. Geol. Surv. Nebr. p. 250 (1871) [1].

Spharagemon collare, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 470 (1875) [2]; Morse, Psyche, vii. p. 296 (1895) [3].

Dissosteira (*Spharagemon*) *collaris,* Sauss. Prodr. Œdip. p. 139 (1884) [4].

Hab. NORTH AMERICA, generally distributed east of the Rocky Mountains, especially northward [1–4].—PANAMA, Colon (Aspinwall) (*coll. S. H. Scudder*).

[SCIRTETICA, Saussure.

Locusta, Harris, Ins. Inj. Veg. p. 145 (1845) (in part.).

Œdipoda, Uhler, in Harr. Ins. Inj. Veg. 3rd ed. p. 179 (1862) (in part.).

Dissosteira (*Scirtetica*), Saussure, Prodr. Œdip. p. 135 (1884).

The genus *Scirtetica* contains a small number of rather brightly marked species of locusts which, for the most part, are confined to the sea-coast from the mouth of the St. Lawrence River to Mexico. An exception to the rule is *S. occidentalis*, which comes from the desert regions of California. The two species which may belong to the present fauna may be diagnosed as follows:—

Table for separating the Species of Scirtetica.

A. Occiput and disc of pronotum smooth; hind tibiæ more or less red, the spines and spurs normal	1. *marmorata,* Harr.
AA. Occiput and disc of pronotum rugulose; hind tibiæ testaceous, the spines and spurs usually long and heavy	2. *occidentalis,* Bruner.

1. **Scirtetica marmorata,** Harris.

Locusta marmorata, Harr. Ins. Inj. Veg. p. 145 (1841) [1].
Œdipoda marmorata, Uhler, in Harr. Ins. Inj. Veg. 3rd ed. p. 179 (1862) [2].
Dissosteira (*Scirtetica*) *marmorata,* Sauss. Prodr. Œdip. p. 141 (1884) [3].
Psinidia marmorata, Davis, Ent. Amer. v. p. 81 (1889) [4].
Scirtetica marmorata, Bruner, in Smith's Ins. N. J. p. 415 (1890) [5]; Scudd. Cat. Orthopt. U.S. p. 38 (1900) [6].
Locusta cerineipennis, Harr. in Hitchc. Rep. Geol. Mass. 1st ed. p. 583 (1833) [7].

Hab. North America, Atlantic and Gulf coast from Ontario to Texas [1–7].

While not recorded from south of the United States, it is quite probable that it also occurs along the Gulf coast of Mexico.

2. **Scirtetica occidentalis,** Bruner.

Scirtetica occidentalis, Bruner, N. Am. Fauna, vii. p. 267 (1873) [1]; Scudd. Cat. Orthopt. U.S. p. 38 (1900) [2].

Hab. North America, Argus Mountains, California (*U.S. Nat. Mus.*[1]).

Belonging as it does to the same faunal area as North-western Mexico, this insect can be looked for there as well as in California. As suggested in connection with that species, the present insect may be congeneric with the one described by me under the name of *Dissosteira planipennis*, anteà, p. 164.]

[MICROTES, Scudder.

Microtes, Scudder, Canad. Ent. xxxii. p. 329 (1900).

Although the present genus does not appear to have been taken any nearer to our territory than Monterey, California, it belongs to practically the same fauna as that found on the west coast of Mexico. It may, therefore, be expected to occur in the peninsula of Lower California.

1. **Microtes nubila,** Scudd.

Microtes nubila, Scudd. Canad. Ent. xxxii. p. 330 (1900) [1].

Hab. North America, Monterey, California (*mus. Leland, Stanford Jr. University* [1]).]

LACTISTA, Saussure.

Œdipoda, Stål (in part.).
Lactista, Saussure, Prodr. Œdip. p. 142 (1884).

This genus is composed of medium-sized insects, which occur from Northern South America to the southern parts of California, Arizona, New Mexico, and Texas. According to available records, at least five distinct species are to be credited to our region. They may be characterized thus:—

Table for separating the Species of Lactista.

A. Pronotal carina cristate, rather strongly arcuate, deeply cut by the principal sulcus. Posterior lower angle of the pronotum rounded. Hind tibiæ blue.
  b. Crest of pronotum evenly and strongly arched, obliquely and deeply cut by the transverse sulcus . . . . . 1. *gibbosus*, Sauss.
  bb. Crest of pronotum not arcuate, the notch less profound . . . 2. *oslari*, Caudell.

AA. Pronotal carina only moderately elevated, straight or nearly so, not deeply cut. Posterior lower angle of the pronotum variable in shape. Hind tibiæ variable in colour.
  b. Lateral lobes of the pronotum with the posterior angle produced into an acute tooth. Disc of wings usually some shade of orange or red . . . . . 3. *punctatus*, Stål.
  bb. Lateral lobes of the pronotum with the posterior angle obliquely truncate. Disc of wings paler.
    c. Disc of wings hyaline, pale blue, rose, or yellow. Median carina of pronotum cristate throughout . . . . . 4. *pulchripennis*, Sauss.
    cc. Disc of wings yellow. Median carina of pronotum cristate on front lobe only . . . . . 5. *pellepidus*, Sauss.

1. **Lactista gibbosus**, Sauss.

Lactista gibbosus, Sauss. Prodr. Œdip. p. 143 (1884) [1]; Scudd. Cat. Orthopt. U.S. p. 38 (1900) [2].
Arphia hesperiphila, Rehn, Canad. Ent. xxxiv. p. 143 (1902) [3].

Hab. North America, San Diego and Los Angeles, California [1–3] (*coll. L. Bruner*); Lower California, Sierra el Taste (*Eisen*).—Mexico, Mazatlan, Sinaloa (*coll. Philad. Acad. Nat. Sci.*).

2. **Lactista oslari**, Caudell.

Lactista oslari, Caudell, Proc. U.S. Nat. Mus. xxviii. p. 468 (1905) [1].

Hab. North America [1 2], Nogales, Arizona (*coll. U.S. Nat. Mus.*), Albuquerque, N. Mex. (*A. N. Caudell*).

Coming as this insect does from the very borders, it will surely be taken in Mexican territory as well. *L. oslari* seems to be very closely related to the preceding species.

3. **Lactista punctatus**, Stål. (Tab. II. figg. 11, 11 *a*, ♀.)

Œdipoda punctata, Stål, Recens. Orthopt. i. p. 130 (1873) [1].
Lactista punctatus, Sauss. Prodr. Œdip. p. 143 (1884) [2]; Rehn, Trans. Am. Ent. Soc. xxvii. p. 227 (1901) [3]; Proc. Acad. Nat. Sci. Philad. 1904, p. 526 [4].

Hab. Mexico [1–4], Presidio, Vera Cruz, Atoyac, &c. (*H. H. Smith*, *Schumann*), Dos Arroyos and Rio Papagaio in Guerrero (*H. H. Smith*), Orizaba (*Saussure* [2]); Guatemala [2]; Costa Rica, San José (*P. Biolley & C. F. Underwood*).

Found in Guerrero in September and October.

4. **Lactista pulchripennis,** Sauss.

Lactista pulchripennis, Sauss. Prodr. Œdip. pp. 143, 144 (1884) [1].

Hab. Costa Rica, Caché (*Rogers*: 1 ♂).—Colombia [1] (*H. H. Smith*).

A single female from Colombia in the collection of the Carnegie Museum is also placed here. It was taken at Bonda, Dept. of Magdalena, at an elevation of 250 feet above the sea-level.

5. **Lactista pellepidus,** Sauss.

Lactista pellepidus, Sauss. Prodr. Œdip. p. 144 (1884) [1].

Hab. Mexico, Presidio (*Forrer*), Jalisco (*Schumann*), Orizaba (*H. H. Smith & F. D. Godman*), Valladolid, Temax, and Merida in Yucatan [1] (*Gaumer*).

The insect referred to as *Lactista pellepidus* by Scudder and Cockerell (see Davenp. Acad. Nat. Sci. ix. p. 31, t. 3. fig. 1) is *Tomonotus aztecus,* Sauss. The one described by James A. G. Rehn as *Lactista boscanus* also seems to belong to *Tomonotus aztecus* (see Proc. Acad. Nat. Sci. Philad. 1902, p. 721).

TOMONOTUS, Saussure.

Tomonotus, Saussure, Rev. et Mag. Zool. xiii. p. 321 (1861); Thomas, Acrid. N. Amer. p. 211 (1873) (in part.); Saussure, Prodr. Œdip. p. 96 (1884).

The genus *Tomonotus* is confined chiefly to Mexico and Central America, but it is also represented in the south-western portions of the United States, where two of the species cross over the international boundary-line in the arid regions. Two well-marked forms are at present included: one of these has the antennæ rather heavy and flattened, and the upper carina of the hind femora suddenly lowered on the outer half; the other has both the antennæ and femoral carina normal. The following table will aid the student in determining them:—

Table for separating the Species of Tomonotus.

A. Tegmina with their apices obliquely truncate. Head and pronotum rather roughly granulose; the scutellum of the vertex gently declivent, wrinkled. Eyes smaller. Pronotum cristate or subcristate, decidedly angulate in front. Wings some shade of red; the fuliginous band following the border to the anal angle. Spurs of hind tibiæ rather unequal in length, those on the outer side the shorter. Antennæ with the joints flattened, thereby giving these members a decidedly heavy appearance.

b. Pronotum strongly compressed, elevato-lamelliformly cristate, the incision profound and oblique; the anterior and posterior edges both strongly angulated. Upper carina of hind femora suddenly lowered beyond the middle.

c. Colour variable, ranging from cinereous to fusco-ferruginous or fulvo-fuscous, mottled and marmorate with black or dark brown. Wings rose-colour, with a narrow fuscous border and a prominent tænia reaching to the base; the apex emarginately vitreous. Hind edge of disc of pronotum subacute. Hind tibiæ banded with testaceous and fuscous . . . . . 1. *mexicanus*, Sauss.

cc. Colour uniformly ferruginous, without darker mottlings and marblings. Wings tile-red, the fuscous border faint, the tænia inconspicuous and not reaching the base of the wing, the apex not perceptibly hyaline. Hind edge of pronotum decidedly acute. Hind tibiæ unicolorous, pale testaceous (♀) to glaucous (♂) . 2. *ferruginosus*, sp. n.

bb. Pronotum above plain, more gently cristate, the incision not oblique; the anterior edge very obtusely angulate, behind subacute. Wings bright carmine, the tænia and border deep black; apex emarginately vitreous. Upper carina of hind femora not suddenly lowered . . 3. *orizabæ*, Sauss.

AA. Tegmina with their apices rounded. Head and pronotum less strongly granulose; scutellum of vertex more decidedly declivent, smoother. Eyes larger. Pronotum carinate, but in nowise cristate; the anterior border subtruncate. Wings yellow, the fuliginous band not reaching the anal angle. Spurs of hind tibiæ not greatly unequal . . . . . 4. *aztecus*, Sauss.

1. **Tomonotus mexicanus**, Sauss.

Tomonotus mexicanus, Sauss. Rev. et Mag. Zool. xiii. p. 321 (1861)[1]; Thomas, Acrid. N. Amer. p. 211 (1873)[2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 526[3].

Hab. MEXICO, Cuernavaca (*Saussure*[1]: ♀ ♂; *O. W. Barrett*: ♂), various localities in Jalisco, &c. (*Jas. A. G. Rehn*), Rio Cocula (*O. W. Barrett*: ♀), Tehuacan (*Mus. Tacubaya*: ♀).

This is a rather variable insect with respect to both size and colour, but it always seems to have the characteristically banded hind tibiæ, which feature is absent from the other described species of the genus.

2. **Tomonotus ferruginosus**, Bruner.

Tomonotus ferruginosus (Bruner), Caudell, Proc. U.S. Nat. Mus. xxviii. p. 470, fig. 4 (1905)[1].

? *Arphia behrensi*, Rehn, Trans. Am. Ent. Soc. xxix. p. 11 (1902)[2].

This species in its general structure comes nearest to *T. mexicanus*, Sauss., but differs from it in the rather more slender form, the less strongly granulose head and thorax, the more elongate and angulate pronotum, the longer and narrower antennæ, and the plain, unbanded hind tibiæ and femora, and also in being of a uniform ferruginous colour throughout, instead of having the tegmina and body mottled and marbled with fuscous. The present insect, moreover, has the wings tile-red, instead of rose-colour, and the margin, along with the shorter and less conspicuous tænia, smoky brown, instead of fuliginous. Its hind tibiæ vary from pale greenish yellow in the female to deep glaucous in the male, while in *T. mexicanus* these members are pale and dark-banded, as in *Spharagemon bolli*.

Length of body, ♂ 20, ♀ 32; of antennæ, ♂ 8, ♀ 10·5; of pronotum, ♂ 5·5, ♀ 8·5; of tegmina, ♂ 20·5, ♀ 28; of hind femora, ♂ 13, ♀ 17 millim.

Hab. North America [1], Fort Grant and Phœnix, Arizona (*coll. L. Bruner*), Southern California (*A. Koebele*), Santa Rita Mts., Arizona (*Schwarz*), Huachuca Mts., Arizona (*coll. U.S. Nat. Mus.*).—Mexico, Uruapan (*coll. Philad. Acad.*: 1 ♀ [2]).

The specimen referred to as coming from Uruapan is not quite typical and bears some resemblance in structure, if not in colour, to the preceding species. It is the insect referred to by Rehn as *Arphia behrensi* (loc. cit.).

3. **Tomonotus orizabæ,** Sauss.

Œdipoda mexicana, Sauss. Rev. et Mag. Zool. xiii. p. 397 (1861) [1]; Thom. Syn. Acrid. N. Amer. p. 214 (1873) [2].

Tomonotus orizabæ, Sauss. Prodr. Œdip. p. 98 (1884) [3]; Scudd. Cat. N. Am. Orthopt. p. 38 (1900) [4]; Rehn, Trans. Am. Ent. Soc. xxix. p. 11 (1902) [5]; Proc. Acad. Nat. Sci. Philad. 1904, p. 526 [6].

Hab. North America, Texas [4].—Mexico, Jalisco and Michoacan [5 6], Salina Cruz, Oaxaca (*C. C. Deam*), Cuernavaca, Morelos (*O. W. Barrett*), Tabasco ? (*coll. L. Bruner*); Guatemala; Costa Rica (*C. F. Underwood*).

This seems to be the most widely distributed species of *Tomonotus*, but not the commonest one, since but few specimens have fallen into the hands of the present writer. It also appears to be less variable in colour than either of the preceding forms.

4. **Tomonotus aztecus,** Sauss. (Tab. II. figg. 7, 8, ♀.)

Œdipoda azteca, Sauss. Rev. et Mag. Zool. xiii. p. 397 (1861) [1]; Thom. Syn. Acrid. N. Amer. p. 215 (1873) [2].

Tomonotus aztecus, Sauss. Prodr. Œdip. p. 99 (1884) [3]; Scudd. Cat. Orthopt. N. Amer. p. 38 (1900) [4]; Rehn, Trans. Amer. Ent. Soc. xxvii. p. 96 (1900) [5]; Proc. Acad. Nat. Sci. Philad. 1904, p. 526 [6].

Hab. North America, Texas [4].—Mexico [1 3], Villa Lerdo in Durango and Aguas Calientes (*L. Bruner*), Cuernavaca in Morelos and Tamaulipas [5 6].

This species forms a transition to the genus *Lactista*, as stated by Saussure. If the Cuernavaca specimen referred to by Rehn is not a misidentification, *T. aztecus* enjoys a very wide range.

DEROTMEMA, Scudder.

Œdipoda of authors (in part.).

Derotmema, Scudder, Ann. Rep. Chief Eng. U.S. Geogr. Surv. W. 100th Merid. 1876, Append. JJ, p. 513.

Derotmema occurs generally over the South-western United States in the arid regions on alkali-flats and other partially bare grounds along rivers and creeks. At least five recognized species will be noticed here.

Table for separating the Species of Derotmema.

A. Metazona of pronotum broad; its hind margin rounded, rarely obtusangulate. Surface of disc smoother.

b. Wing-band normally broader than the hind edge of the pronotum, reaching the margin posteriorly and percurrent, or broken only in the posterior axillary area . . . . . 1. *laticinctum*, Scudd.

bb. Wing-band narrower than the hind edge of the pronotum, not reaching the posterior margin, and for the most part lacking in the axillary field . . . . . 2. *delicatulum*, Scudd.

AA. Metazona of the pronotum, even in the ♀, little or no broader than at the eyes, its hind edge angulate. Surface of disc strongly rugulose.

b. Rugosities of the pronotum above irregular. Dark band of wings relatively narrow. Wings pale blue or citron.

c. Pronotum rectangulate, or nearly so, behind; costal margin of the tegmina with dull fuscous and ashy tints in nowise conspicuously contrasted; basal half of the wings pale yellow . . . . . [3. *cupidineum*, Scudd.]

cc. Pronotum very obtusangulate behind; costal margin of the tegmina with vivid contrasts of black and pallid tints; basal half of wings pale blue or sea-green . . . . . [4. *saussureanum*, Scudd.]

bb. Rugosities on the metazona of the pronotum forming regular longitudinal ridges. Wing-band broad; base yellow or citron . . . . . 5. *haydeni*, Thom.

1. **Derotmema laticinctum,** Scudd.

Derotmema laticinctum, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 389 (1900) [1]; Scudd. & Ckll. Proc. Dav. Acad. Sci. ix. p. 31 (1902) [2].

Hab. North America, various localities in Southern Arizona and New Mexico [1 2].

While no Mexican records are at hand, this locust certainly occurs across the line in Northern Chihuahua and Sonora.

2. **Derotmema delicatulum,** Scudd.

Derotmema delicatulum, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 390 (1900) [1].

Hab. North America, near Yuma, Arizona, and Mojave, California (*Scudder* [1]).

Like the preceding, this species undoubtedly will also be found across the international line in Mexican territory.

[3. **Derotmema cupidineum,** Scudd.

Derotmema cupidineum, Scudd. Ann. Rep. Chief Eng. U.S. Geogr. Surv. W. 100th Merid. 1876, p. 513 (1876) [1]; Sauss. Prodr. Œdip. pp. 156, 157 (1884) [2].

Hab. NORTH AMERICA, Northern New Mexico[1 2], and Colorado (*coll. U.S. Nat. Mus.*), Silver City, N. Mexico (*coll. L. Bruner*).

While not reported so commonly from Southern New Mexico, it is possible that it also reaches across the international borders.]

[4. **Derotmema saussureanum,** Scudd.

Derotmema saussureanum, Bruner, MS.[1]

Derotmema saussureanum, Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 391 (1900) [2].

Hab. NORTH AMERICA, Southern California, numerous localities; South-western Arizona (*L. Bruner* [2]).

Very likely occurs in Sonora and Lower California.]

5. **Derotmema haydeni,** Thomas.

Œdipoda haydeni, Thom. Ann. Rep. U.S. Geol. Surv. Terr. v. pp. 460, 461 (1872) [1]; Sauss. Addit. Prodr. Œdip. p. 171 (1888) [2].

Derotmema haydeni, Bruner, Ann. Rep. Nebr. Bd. Agr. 1896, p. 132 (1897) [3]; Scudd. Proc. Amer. Acad. Arts & Sci. xxxv. p. 392 (1900) [4].

Derotmema brunnerianum, Sauss. Prodr. Œdip. pp. 155, 156 (1884) [5].

Hab. NORTH AMERICA, from Eastern Montana to Texas [1–5].—MEXICO, Villa Lerdo, Durango, and Comancho, Zacatecas (*L. Bruner*: ♂ ♀).

The Mexican specimens of this species are all yellow-winged, while in the United States, especially northward, both red- and yellow-winged individuals occur.

TRACHYRHACHIS, Scudder.

Œdipoda, Latreille (in part.) et auctt.

Psinidia, Stål, Recens. Orthopt. i. p. 133 (1876).

Psinidia (*Trachyrhachis*), Saussure, Prodr. Œdip. pp. 160, 162 (1884).

Trachyrhachis, Scudder, Ann. Rep. Chief Eng. 1876, p. 512; Bruner, Ent. News, xvi. p. 259 (1905).

Mestobregma, Scudder, Bull. U.S. Geol. Surv. Terr. ii. p. 264 (1876).

The present genus is composed of rather small or medium-sized grasshoppers. In their distribution most of the somewhat numerous forms are at home on the open prairies of the Middle and South-western United States. A few of the species are confined to special food-plants and are restricted in their distribution, while others enjoy a wide range. The various forms may be separated by the subjoined table; less than half of them belong to Mexican territory.

Table for separating the Species of Trachyrhachis.

A. Tegmina irregularly marked and blotched with fuscous.

b. Disc of wings hyaline or vitreous, sometimes very pale dirty yellow, without a fuliginous band, but in some cases with the apex dusky.

c. Wings entirely vitreous, some of the veins alone dark.

d. Species robust; tegmina and wings about as long as the abdomen. (Zacatecas.) . . . . . 3. *inconspicua*, sp. n., ♀.

dd. Species more slender; tegmina and wings longer than the abdomen.

e. General colour greenish-white marked with black . . . [*pulchella*, Bruner.]

ee. General colour cinereous and brown marked with fuscous . . . . . [*kiowa*, Thom.]

cc. Wings with their apical portion clouded.

d. Anterior field and apical two-fifths in both sexes strongly fuliginous . . . . . 2. *compacta*, sp. n.

dd. Anterior field and apical two-fifths in male alone somewhat clouded. (Zacatecas.) . . . . . 3. *inconspicua*, sp. n., ♂.

bb. Disc of wings some shade of yellow or red, crossed by a more or less well-defined fuliginous band.

c. Wings with the disc always yellow.

d. The disc of wings pale dirty yellow.

e. Wing-band incomplete or interrupted near its middle. Costa on apical half dark; apex more or less conspersed with dusky. (Mexico, southerly.) . . . . . 1. *mexicana*, Sauss.

ee. Wing-band complete.

f. Species robust; the hind femora very broad, their upper carina suddenly narrowing just beyond the middle; wing-band pale, the tænia nearly reaching the base . [*aspera*, Scudd.]

ff. Species more slender; the hind femora not unusually broad and their superior carina not suddenly narrowing; the tænia reaching halfway to base.

g. Fuliginous band of wings broad, dark and scarcely narrowed anteriorly. (Mts. of Chihuahua.) . . . 4. *townsendi*, sp. n.

gg. Fuliginous band of wings narrow. (San Francisco.) [*occidentalis*, sp. n.]

dd. The disc of wings lemon-yellow.

e. Wing-band always complete, not interrupted anteriorly.

f. Pronotum rugose, the middle section of the median carina short, elevated, and rounded. Hind femora stout, the upper carina suddenly lowered one-third the length from the apex . . . . . [*thomasi*, Caudell.]

ff. Pronotum smooth, the middle section of the median carina low. Hind femora moderately slender, the upper carina not suddenly lowered . . . . . [*cinctipennis*, Bruner.]

ee. Wing-band almost wanting, incomplete or interrupted anteriorly.
f. Fuliginous band almost entirely obliterated, showing only as a small clouded area anteriorly and another in the radial field . . . . . [*obliterata*, Bruner.]
ff. Fuliginous band much less interrupted, and in some instances nearly complete.
g. Smaller (♂ 14–16, ♀ 20–22 millim.). Pronotum very strongly rugose . . . . . 5. *texana*, Sauss.
gg. Larger (♂ 17–20, ♀ 24–26 millim.). Pronotum less strongly rugose.
h. Head of moderate size. Pronotum not greatly constricted near middle . . . . . 6. *fuscifrons*, Stål.
hh. Head large. Pronotum greatly constricted near middle . . . . . 7. *capito*, Stål.
cc. Wings with the disc usually red.
d. Sides of pronotum with a small white spot. Tænia of wings reaching the base . . . . . [*nevadensis*, Bruner.]
dd. Sides of pronotum with the lower edge broadly pale, crossed above by an oblique dark band. Tænia of wings extending but a short distance towards the base.
e. Tegmina pale on posterior half, the dark markings confined to anterior half. Disc of wings either red or yellow, usually the latter . . . . . [*plattei*, Thom.]
ee. Tegmina with the dark markings occupying the entire member, the larger ones, however, confined to the anterior half. Disc of wings carmine . . . . . [8. *rubripennis*, sp. n.]
AA. Tegmina regularly and evenly marked with large dark patches, as in the majority of the species of *Hippiscus*. Wings with the disc pale yellow, crossed by a broad arcuate fuliginous band . . . [*coronata*, Scudd.]

1. **Trachyrhachis mexicana**, Sauss.

Psinidia (*Trachyrhachis*) *mexicana*, Sauss. Prodr. Œdip. p. 164 (1884) [1].
Mestobregma mexicanum, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 527 [2].

Hab. Mexico [1], Guadalajara, Jalisco (*McClendon* [2]), La Joya, San Luis Potosi (*M. E. Hoag*), Tlalpam (*L. Bruner*).

The collections of Godman and Salvin do not contain specimens of the present, nor of any of the following species belonging to the genus.

2. **Trachyrhachis compacta**, sp. n.

Very similar to the preceding in general appearance, but slightly more robust, the pronotum more strongly rugose and with the median carina less elevated anteriorly, where in the present species the incisions are less profound. In *T. compacta* the sulcus of the fastigium is provided with a V-shaped carina that projects into it from the deep pit at the upper edge of the frontal costa between the lateral foveolæ. The present

species has the lower posterior angles of the pronotum less acute than in *T. mexicana*, while the wings, which have the greater part of the costal field and at least the apical one-third of the radial field fuliginous, show no distinct transverse dusky band. The hind tibiæ are brown, instead of glaucous as in *T. mexicana*.

Length of body, ♂ 16, ♀ 22·5; of pronotum, ♂ 4·5, ♀ 5; of tegmina, ♂ 16, ♀ 19; of hind femora, ♂ 11, ♀ 12·4 millim.

Hab. NORTH AMERICA, Silver City, New Mexico (*coll. L. Bruner*).

Although the types of the present species come from a point 50 or 60 miles distant, it most certainly occurs on Mexican territory as well. They were taken in July.

3. **Trachyrhachis inconspicua,** sp. n.

This insect can best be compared with *T. compacta*, although it also bears a rather close resemblance to *T. mexicana*. It is less rugose and has a higher median carina on the pronotum than either of them, and the lower posterior angles are as in the former. The general colour is brownish-testaceous, with the usual fuscous markings. Its wings are hyaline, without trace of the fuliginous band, but the usual dusky stigma is present in addition to some of the longitudinal veins (♀), or much of the apex is clouded (♂). Hind tibiæ deep bluish-grey, their apices blackish.

Length of body, ♂ 13·5, ♀ 22; of pronotum, ♂ 3·5, ♀ 4·25; of tegmina, ♂ 13, ♀ 18·5; of hind femora, ♂ 10, ♀ 12 millim.

Hab. MEXICO, Zacatecas (*L. Bruner*: 2 ♂, 1 ♀).

It is barely possible that the insects referred by Rehn to *T. mexicana*, Sauss., are the same as those here described as new. The types were found in November.

4. **Trachyrhachis townsendi,** sp. n.

In general appearance the present insect is very similar to *T. kiowa* and *T. thomasi*, from both of which it is readily separated by its broad and but little, if at all, anteriorly narrowed wing-band. In coloration *T. townsendi* is very like some of the species of *Trimerotropis*—e. g., *T. vinculata* and allies; but it differs from them in its characteristic Trachyrhacine structure. The head is large, and a little wider than (♀), or about as wide as (♂), the front edge of the rather strongly rugose pronotum. The latter has its median carina moderately prominent on the anterior lobe, where both sections are evenly rounded, the front one being about twice the length of the other; on the hind lobe it is less elevated, but also slightly arched, especially in the male, where the carina is much more pronounced than in the opposite sex. The tegmina and wings are considerably longer than the abdomen, even in the female. Hind femora moderately robust, nearly reaching (♀) or somewhat surpassing (♂) the tip of the abdomen.

General colour dull greyish-brown, profusely mottled and blotched with dark brown and dull black, the markings on the costal margin of the tegmina forming the usual two solid patches separated by pale ones and on the dorsal field and apical half or two-fifths evenly conspersed with brown. Wings with the disc pale greenish-yellow, crossed near their middle by a broad arcuate fuliginous band, which is produced into a broad tænia that occupies most of the costal field towards the base, and posteriorly follows the border halfway to the anal angle; the apical portion is vitreous, in the male rather heavily, in the female with a few dark blotches. Hind tibiæ somewhat glaucous, more pronounced in the male, with a pale basal annulus.

Length of body, ♂ 16, ♀ 27; of pronotum, ♂ 3·5, ♀ 5·15; of tegmina, ♂ 17, ♀ 24; of hind femora, ♂ 10·5, ♀ 14 millim.

Hab. MEXICO, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

Only two specimens of this species are before me as I write. They belong to my collection.

5. **Trachyrhachis texana,** Sauss.

Psinidia (*Trachyrhachis*) *fuscifrons,* var. *texana,* Sauss. Prodr. Œdip. pp. 161, 163 (1884)[1].

Hab. North America, Texas[1], San Antonio (*M. Newell*).—Mexico, Mitla (*C. C. Deam, U.S. Nat. Mus.*).

Although the insect here treated is very closely related to *T. fuscifrons*, Stål, its much smaller size and more strongly rugose pronotum have decided me in treating it as a distinct species. Found at Mitla in July.

6. **Trachyrhachis fuscifrons,** Stål.

Psinidia fuscifrons, Stål, Recens. Orthopt. i. p. 134 (1873)[1].
Psinidia (*Trachyrhachis*) *fuscifrons,* Sauss. Prodr. Œdip. p. 163 (1884)[2].
Trachyrhachis fuscifrons, Sauss. Addit. Prodr. Œdip. p. 58 (1888)[3].
Mestobregma fuscifrons, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 39 (1900)[4].

Hab. North America, Texas, &c.[1–4].

While no specimens or records are at hand that would indicate the occurrence of this species in Mexican territory, the fact of its being very common in the country bordering the Rio Grande is sufficient evidence that it may be taken across that river in both Coahuila and Nuevo Leon, and perhaps also in Tamaulipas.

7. **Trachyrhachis capito,** Stål.

Psinidia capito, Stål, Recens. Orthopt. i. p. 133 (1873)[1].
Psinidia (*Trachyrhachis*) *capito,* Sauss. Prodr. Œdip. p. 163 (1884)[2].
Trachyrhachis capito, Sauss. Addit. Prodr. Œdip. p. 58 (1888)[3].
Mestobregma capito, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 39 (1900)[4].

Hab. North America, Texas[1–4].

Like the preceding, the insect known as *T. capito*, on account of its uncommonly large head, is very numerous along the American shore of the Rio Grande. It is presumed that it also abounds just across this river in Mexican territory.

[8. **Trachyrhachis rubripennis,** sp. n.

This species is closely related to the locust described by Thomas under the name *Œdipoda plattei.* It seems to differ from it, however, in being smaller, in the more equal size of the sexes, in the narrower wing-band, and in the shorter and more obtuse hind angle of the disc of the pronotum. The dark and light markings of *T. rubripennis* are also more in contrast than they are in *T. plattei.*

Length of body, ♂ 17, ♀ 23; of pronotum, ♂ 3·6, ♀ 4·75; of tegmina, ♂ 20, ♀ 25; of hind femora, ♂ 10·5, ♀ 12·5 millim.

Hab. North America, Oracle, Arizona (*E. A. Schwarz, U.S. Nat. Mus.*: 1 ♂, 1 ♀).

The widely separated localities in which *T. plattei* and *T. rubripennis* occur, without anything similar being known from intermediate points, has decided me in describing

the latter as distinct. Its range very likely extends to Mexican territory, and for this reason it is included here.]

PSINIDIA, Stål.

Œdipoda (in part.), auctt.
Psinidia, Stål, Recens. Orthopt. i. pp. 117, 138 (1873).

The present genus is rather widely distributed, but the species are more frequently met with along the sea-coast and the shores of the larger lakes northward. The only representative is the following, which most assuredly crosses the Mexican border, although no records or specimens are at hand to confirm the statement.

1. **Psinidia fenestralis,** Serv.

Œdipoda fenestralis, Serv. Hist. Orthopt. p. 726 (1839)[1]; Thomas, Acrid. N. Amer. p. 118 (1873)[2].
Psinidia fenestralis, Stål, Recens. Orthopt. i. p. 133 (1873)[3]; Sauss. Prodr. Œdip. p. 161 (1884)[4]; Scudd. Cat. Orthopt. U.S. p. 40 (1900)[5].
Locusta eucerata, Harr. Ins. Inj. Veg. 3rd ed. p. 180 (1862)[6].
Œdipoda eucerata, Scudd. Journ. Bost. Soc. Nat. Hist. vii. p. 472 (1862)[7]; Glov. Illustr. N. Amer. Ent., Orthopt. t. 3. figg. 1, 2, t. 5. fig. 23 (1872)[8]; Thom. Acrid. N. Amer. p. 119 (1873)[9].
? *Psinidia sulcifrons,* var. *amplicornis,* Caudell, Proc. U.S. Nat. Mus. xxvi. p. 791, t. 55. fig. 2 (1903)[10].

Hab. North America, South-western Texas (*A. Wadgymar*), Victoria, Texas (*Caudell*), Gulf coast and northward [1–10].

This insect occurs in both yellow- and red-winged forms, those with the red wings being most prevalent in the south, while the yellow-winged individuals predominate northward.

[CONOZOA, Saussure.

Conozoa, Saussure, Prodr. Œdip. p. 164 (1884); Scudder, Cat. Orthopt. U.S. p. 40 (1900).
Psinidia, Scudder, U.S. Geogr. Surv. 1876, Append. ii. p. 512, also Append. Rep. U.S. Ent. Comm. ii. p. 27, t. 17. figg. 13, 14 (1880) (part.).

Conozoa seems to be absent from the region covered by this work. At least, both the collections studied and the references examined have failed to indicate that it is found in Mexican territory. Notwithstanding this lack of evidence for its inclusion among the fauna of Central America, the genus seems to be most abundantly represented in the border region of the South-western United States and, in several instances, to within a very few miles of Northern Mexico. There are at least eight so-called species which will fall into this category: *C. behrensi*, *C. rogenhoferi*, and *C. rebellis*, Saussure, and *C. sulcifrons*, *C. acuminata*, *C. corrugata*, *C. picturata*, and *C. melleola*, Scudder, any, or all, of which may be looked for south of the Mexican frontier.

They are very similar to some of the forms usually placed in the next genus.]

TRIMEROTROPIS, Stål.

Œdipoda, auctt. (in part.).

Trimerotropis, Stål, Recens. Orthopt. i. pp. 118, 134 (1873); Saussure, Prodr. Œdip. p. 166 (1884); McNeill, Proc. U.S. Nat. Mus. xxiii. p. 393 (1901).

Pseudotrimerotropis, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 334 (1901).

Trimerotropis is the largest and most widely distributed American genus of the Œdipodinæ. While perhaps only about a dozen of the described forms are credited to, or contained in, the collections studied, upwards of thirty so-called species undoubtedly reach or belong to Mexican territory. Some of these are very distinct and easily recognizable, but others seem to be very closely allied and are difficult to separate. The genus has been recently revised by Jerome McNeill [Proc. U.S. Nat. Mus. xxiii. pp. 393–449, t. 21 (1901)], who gives an analytical key for the separation of the then known species, most of which are also fully described and their geographical range noted. This being the case, the reader is referred to that paper for a fuller account of these insects. The more recently described forms are here referred to their approximate positions in McNeill's table or in the series. Only a single form is now added.

1. **Trimerotropis texana,** Bruner.

Conozoa texana, Bruner, Proc. U.S. Nat. Mus. xii. p. 65 (1890) [1]; Scudd. Cat. Orthopt. U.S. p. 40 (1900) [2].

Trimerotropis texana, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 406 (1901) [3].

Hab. North America, El Paso, Texas (*G. W. Dunn*), Las Cruces, New Mexico (*C. H. T. Townsend*).—Mexico, Northern Chihuahua (*L. Bruner*).

2. **Trimerotropis albolineata,** Bruner.

Conozoa albolineata, Bruner, Proc. U.S. Nat. Mus. xii. p. 66 (1890) [1]; Scudd. Cat. Orthopt. U.S. p. 40 (1900) [2].

Trimerotropis albolineata, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 407 (1901) [3].

Hab. North America, Los Angeles, California (*Koebele*, *Coquillett*).

Other specimens of this species that were taken near the Mexican border in Southern Arizona have been seen by me. These were collected by Dr. R. E. Kunze, of Phœnix, Arizona. The insect certainly reaches Mexican territory.

3. **Trimerotropis monticola,** Sauss.

Trimerotropis monticola, Sauss. Prodr. Œdip. p. 170 (1884) [1]; Addit. Prodr. Œdip. p. 63 (1888) [2]; Scudd. Cat. Orthopt. U.S. p. 42 (1900) [3]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 422 (1901) [4].

Hab. Mexico, Perote, near Tezuitlan, 2600 metres (*Saussure* [1]).

4. **Trimerotropis fascicula,** McNeill.

Trimerotropis fascicula, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 425 (1901) [1]; Rehn, Trans. Amer. Ent. Soc. xxvii. p. 227 (1901) [2].

Trimerotropis monticola, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 97 (1900) [3].

Hab. North America, Silver City, New Mexico [1] (*L. Bruner*).—Mexico, Eslava [2], Cuernavaca, Tacubaya, and Tizapan [3] (*O. W. Barrett*).

Like the preceding, this apparently common species of *Trimerotropis* is absent from the collections now being studied.

5. **Trimerotropis townsendi,** sp. n.

A rather small, but moderately robust species, the prevailing colour of which is brownish-ferruginous. Hind tibiæ bright coral-red, the tegmina inconspicuously banded, the insect in this respect somewhat resembling *T. modesta,* Bruner. It is also related to *T. præclara,* McNeill, near which it should be placed in his synoptic table of the species of the genus *Trimerotropis.*

Head a very little narrower than the front edge of the pronotum; eyes somewhat prominent in the male, less so in the female, in both sexes shorter than the cheeks below them; vertex not quite so broad as the shortest diameter of one of the eyes, rather deeply sulcate, with prominent bounding carinæ and usually provided with a fairly strong longitudinal median carina; lateral foveolæ equilaterally triangular, much deeper and more pronounced in the male than in the female; frontal costa with the walls quite prominent, expanding between the antennæ and again towards the clypeus, which latter it does not quite reach, rather strongly and broadly sulcate throughout the greater part of its length, the sulcus most pronounced in the male, in which sex there is a deep **V**-shaped depression at its upper extremity just before the sulcation of the fastigium. Antennæ rather heavy, nearly (♀) or quite (♂) as long as the hind femora. Pronotum strongly rugose (reminding one of the sculpturing of this part in some of the smaller species of *Hippiscus*), in the female sometimes provided with a series of rounded tubercles on the disc of the posterior lobe, short; its hind margin somewhat obtuse in the female and at a right angle in the male, the lower posterior angle broadly rounded and without a tooth-like projection. Tegmina a little narrower than in some of the other red-legged species, profusely veined on the basal three-fifths and considerably (♂) or only slightly surpassing (♀) the tip of the abdomen. Hind femora moderately robust.

General colour above brownish-ferruginous, the tegmina provided with two inconspicuous dusky bands, one sub-basal, the other near the middle, beyond this with a few irregularly-arranged fuscous blotches. Wings with the disc pale yellow, crossed about the middle by a moderately wide fuscous band, the apical third a trifle clouded or smoky (♀), or with the apex also fuscous, and the fuscous space separated from the band by a wide, much paler portion. Hind femora provided externally with a præapical fuscous band and indications of another band on the upper edge midway towards the base; internally with two pale testaceous bands, separated by one of black, the knee and greater part of basal half also black. Hind tibiæ and tarsi bright coral-red. Abdomen brownish above, yellowish below. Antennæ dark ferruginous, becoming black beyond the basal third.

Length of body, ♂ 18, ♀ 25; of pronotum, ♂ 4·2, ♀ 5; of tegmina, ♂ 20, ♀ 23; of hind femora, ♂ 11·75, ♀ 13 millim.

Hab. Mexico, Colonia Garcia, Chihuahua (*C. H. T. Towsend*).

Numerous specimens of both sexes.

6. **Trimerotropis citrina,** Scudd.

Trimerotropis citrina, Scudd. Bull. U.S. Geol. Surv. ii. p. 265 (1876) [1]; Sauss. Prodr. Œdip. p. 169 (1884) [2]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 426 (1901) [3].

Hab. North America, Manitoba to Texas [1–3], Carrizo Springs, Texas (*A. Wadgymar*). —Mexico, Northern Chihuahua (*L. Bruner*).

This insect is common in the extreme western part of Dimmit County, Texas, and occurs in Mexican territory on the opposite side of the Rio Grande.

7. **Trimerotropis tolteca,** Sauss.

Œdipoda tolteca, Sauss. Rev. et Mag. Zool. xiii. p. 397 (1861) [1]; Thomas, Acrid. N. Am. p. 215 (1873) [2].

Trimerotropis tolteca, Sauss. Prodr. Œdip. p. 169 (1884) [3]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 429 (1901) [4].

Hab. Mexico, in temperate and higher regions, Orizaba, Oaxaca [1–4].

Not contained in the collections at hand for study.

8. **Trimerotropis pistrinaria,** Sauss.

Trimerotropis pistrinaria, Sauss. Prodr. Œdip. p. 173 (1884) [1]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 430 (1901) [2].

Hab. North America, Texas.—Mexico, Zacatecas [1], Durango and Colonia Garcia (*coll. L. Bruner*).

9. **Trimerotropis melanoptera,** McNeill.

Trimerotropis melanoptera, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 430 (1901) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1902, p. 722 [2].

Hab. North America, Silver City and Sacramento Mts., New Mexico.—Mexico, Northern Chihuahua (*L. Bruner*).

10. **Trimerotropis californica,** Bruner.

Trimerotropis californica, Bruner, Proc. U.S. Nat. Mus. xxiii. p. 431 (1901) [1].

Hab. North America, Los Angeles, California [1].—Mexico, Northern Sonora (*L. Bruner*).

11. **Trimerotropis pallidipennis,** Burm.

Œdipoda pallidipennis, Burm. Handb. Ent. ii. p. 464 (1839) [1]; Thomas, Acrid. N. Am. p. 218 (1873) [2].

Trimerotropis pallidipennis, Sauss. Prodr. Œdip. p. 171 (1884) [3]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 437 (1901) [4].

Œdipoda straminea, Erichs. in Schomburgk's Faun. und Flor. Brit. Guiana, p. 582 (1848) [5].

Hab. Mexico [3], Amula in Guerrero (*H. H. Smith*), Orizaba (*H. H. Smith & F. D. Godman*), Tlalpam, Agua Calientes, and Zacatecas (*L. Bruner*), Distrito Federal (*O. W. Barrett*); Central America [1 3].—South America, Guiana [5].

This species seems to be common and rather widely distributed over Middle and Southern Mexico, and from there southward into South America, almost or quite to the

Rio Negro in Argentina. It is somewhat similar to our *T. vinculata*, both in appearance and habits.

12. **Trimerotropis vinculata,** Scudd.

Trimerotropis vinculata, Scudd. Ent. Notes, v. p. 25 (1875–76) [1]; Append. Rep. U.S. Ent. Comm. ii. p. 27, t. 17. fig. 11 (1880) [2]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 439 (1901) [3].
Trimerotropis cincta, Sauss. Prodr. Œdip. p. 171 (1884) [4].
Trimerotropis fascicula, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 227 (1905) [5]; xxix. p. 11 (1902) [6].

Hab. NORTH AMERICA, various localities from the Saskatchewan to the Mexican boundary [1–6].—MEXICO, Chihuahua (*M. Kerr, L. Bruner*).

This is one of the commonest species of the genus, and seems to be very closely related to the *T. pallidipennis*, which occurs throughout the warmer parts of South America, as well as in portions of Central America and Mexico.

13. **Trimerotropis cyaneipennis,** Bruner.

Trimerotropis cyaneipennis, Bruner, Proc. U.S. Nat. Mus. xii. p. 68 (1890) [1]; Scudd. Cat. Orthopt. U.S. p. 42 (1900) [2]; McNeill, Proc. U.S. Nat. Mus. xxiii. p. 445 (1901) [3].

Hab. NORTH AMERICA, Utah and Idaho to Arizona [1–3].—MEXICO, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

This insect appears to be partial to mountainous regions, where it occurs among the talus at the foot of cliffs. It also frequents lava-beds in several sections of the country *.

* The following species of the genus *Trimerotropis* have been taken in, or credited to, regions which would permit of their being found south of the Mexican border:—

T. cincta, Thomas, Proc. Acad. Nat. Sci. Philad. 1870, p. 80.—Texas, New Mexico, &c.
T. laticincta, Sauss. Prodr. Œdip. p. 169 (1884).—New Mexico and Texas.
T. rebellis, Sauss. Addit. Prodr. Œdip. p. 60 (1888).—California.
T. cæruleipes, Scudd. Rep. U.S. Ent. Comm., Append. ii. p. 27 (1880).—California and Arizona.
T. cæruleipennis, Bruner, Canad. Ent. xvii. p. 10 (1885).—Los Angeles, California.
T. bifasciata, Bruner, Proc. U.S. Nat. Mus. xii. p. 70 (1890).—Southern California.
T. thalassica, Bruner, loc. cit. p. 72.—California.
T. modesta, Bruner, loc. cit. p. 72.—Silver City, New Mexico.
T. pacifica, Bruner, loc. cit. p. 78.—Los Angeles, California.
T. hyalina, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 405 (1901).—California.
T. cristata, McNeill, loc. cit. p. 408.—Los Angeles, California.
T. porrecta, McNeill, loc. cit. p. 409.—California.
T. coquilletti, McNeill, loc. cit. p. 413.—California.
T. tessellata, McNeill, loc. cit. p. 417.—Arizona.
T. caliginosa, McNeill, loc. cit. p. 417.—Los Angeles, California.
T. albescens, McNeill, loc. cit. p. 418.—Los Angeles, California.
T. collaris, McNeill, loc. cit. p. 437.—San José del Cabo, Lower California.

CIRCOTETTIX, Scudder.

Œdipoda, auctt. (in part.).
Circotettix, Scudder, Bull. U.S. Geol. Surv. Terr. ii. p. 265 (1876).

Circotettix is a northern genus that contains about a dozen species, only one of which reaches Northern Mexico so far as known at the present time. These insects resemble the Old-World genus *Bryodema* in their general structure.

1. **Circotettix undulatus,** Thomas.

Œdipoda undulata, Thom. Ann. Rep. U.S. Geol. Surv. v. p. 460 (1871) [1]; Syn. Acrid. N. Am. pp. 125, 126 (1873) [2].
Circotettix undulatus, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 265 (1876) [3]; Psyche, ix. p. 139 (1900) [4]; Rehn, Proc. Acad. Nat. Sci. Philad. 1902, p. 722 [5].

Hab. North America, from the plains of the Saskatchewan to Southern New Mexico [1–5].—Mexico, Northern Chihuahua (*L. Bruner*).

This locust is partial to bare, more or less alkaline, ground, and for that reason is found throughout the more arid regions wherever suitable localities occur. It is just possible that *Circotettix carlinianus*, Thomas, will also be found in the same districts. It differs from *C. undulatus* in being slightly more robust and in having the disc or base of the wings fuliginous instead of yellow.

HADROTETTIX, Scudder.

Œdipoda (in part.).
Gryllus, Say (in part.).
Hadrotettix, Scudder, Ann. Rep. Chief Eng. 1876, App. JJ, p. 511.

The locusts of this genus are confined to the Rocky Mountain regions and south-westward, where they are to be met with on hill-tops and slopes in arid localities. Two so-called species are represented, and may be separated as follows:—

Table for separating the Species of Hadrotettix.

A. Wings crossed by a broad fuscous band that follows the hind border nearly to the anal angle. No tænia directed toward the base in the humeral field . . . . . 1. *trifasciatus*, Say.

AA. Wings crossed by a rather narrow fuliginous band, not following the hind border far towards the anal angle . . . . . 2. *nebulosus*, Scudd.

T. nubila, McNeill, loc. cit. p. 442.—New Mexico.
T. variegata, McNeill, loc. cit. p. 443.—Southern California.
T. aliciens, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 37, t. 2. fig. 1 (1902).—Organ Mts., New Mexico.
T. cyanea, Scudd. loc. cit. p. 36, t. 2. fig. 3.—Organ Mts., New Mexico.
T. rubripes, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 568.—Albuquerque, New Mexico.
T. snowi, Rehn, Trans. Kans. Acad. Sci. 1905, p. 223.—Yavapi County, Arizona.
T. schaefferi, Caudell, Brooklyn Inst. Mus. Sci., Bull. i. p. 112, t. 7 (1904).—Texas.

1. **Hadrotettix trifasciatus,** Say.

Gryllus trifasciatus, Say, Amer. Ent. iii. t. 34 (1828) [1].
Œdipoda trifasciata, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 729 (1870) [2]; Thomas, Acrid. N. Am. p. 127 (1873) [3].
Hadrotettix trifasciatus, Scudd. Ann. Rep. Chief Eng. 1876, p. 511 (1876) [4]; Psyche, ix. p. 67 (1900) [5].
Arphia trifasciata, Caulf. Rep. Ent. Soc. Ont. xviii. p. 70 (1888) [6].
Œdipoda pruinosa, Thomas, Proc. Acad. Nat. Sci. Philad. 1870, p. 80 (1870) .
Œdipoda hoffmanni, Thomas, Rep. U.S. Geol. Surv. v. p. 127 (1873) [8].

Hab. NORTH AMERICA, Rocky Mountain region, from the Saskatchewan to South-western Texas [1–8].—MEXICO, States of Chihuahua and Coahuila (*L. Bruner*).

2. **Hadrotettix nebulosus,** Scudd.

Hadrotettix nebulosus, Scudd. Psyche, ix. p. 69 (1900) [1].

Hab. MEXICO, Sinaloa [1] (*coll. S. H. Scudder*).

TREPIDULUS, McNeill.

Mestobregma (in part.), Scudder, Psyche, ix. p. 91 (1900).
Trepidulus, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 394 (Jan. 1901).
Araeopteryx, Caudell, Canad. Ent. xxxiii. p. 103 (April 1901).

This is still another characteristic genus of the arid region of Northern Mexico and the south-western portions of the United States. Three species are known, and all of them undoubtedly belong to the Mexican fauna. They may be recognized by the annexed key:—

Table for separating the Species of Trepidulus.

A. Larger and more robust. Disc of wings rose-colour or miniaceous, with or without a fuliginous wing-band. Posterior lateral angle of pronotum provided with a tooth . . . . . 1. *rosaceus,* Scudd.

AA. Smaller and more slender. Disc of wings vitreous or hyaline, without trace of a fuliginous wing-band. Posterior lateral angle of pronotum without a tooth.

b. Pronotum with the lower posterior angle slightly acute in both sexes. Wings transparent, with the basal fifth washed with citrous . . . . . 2. *gracilipes,* Caudell.

bb. Pronotum with the lower posterior angle well-rounded in both sexes. Wings wholly pellucid, with some infuscation of the apical veins . . . . . [3. *hyalinus,* Scudd.]

1. **Trepidulus rosaceus,** Scudd.

Mestobregma rosaceum, Scudd. Psyche, ix. p. 91 (1900) [1].
Trepidulus rosaceus, McNeill, Proc. U.S. Nat. Mus. xxiii. p. 398 (Jan. 1901) [2].
Araeopteryx penelope, Caud. Canad. Ent. xxxiii. p. 103 (April 1901) [3].

Hab. North America [1–3], Yuma (*A. P. Morse*), Phœnix (*R. E. Kunze*), and Florence, Pinal Co., Arizona (*C. R. Biederman*), Las Cruces, New Mexico (*T. D. A. Cockerell*), San Bernardino (*Coquillett*), Palm Springs, and Tehachapi, California (*A. P. Morse*).

Although no definite records seem to be at hand pointing to the occurrence of this insect in Mexican territory, that referring to Yuma, Arizona, on the border-line between the two countries, is practically equivalent to one.

2. **Trepidulus gracilipes,** Caudell.

Mestobregma gracilipes, Caud. Proc. U.S. Nat. Mus. xxviii. p. 271, fig. 5 (1905) [1].

Hab. North America, Nogales, Arizona, Huachuca Mts. (*E. J. Oslar* [1]).

[3. **Trepidulus hyalinus,** Scudd.

Mestobregma hyalinum, Scudd. Psyche, ix. p. 92 (1900) [1].

Hab. North America, various localities in California (*A. P. Morse* [1]).

This insect approaches much more closely to *T. rosaceus* than to any of the species of *Trachyrhachis*, and with *T. gracilipes* leads directly to it, so far as the structure of the sides of the pronotum is concerned. The hind femora and head-characters are practically the same in all three insects.]

ANCONIA, Scudder.

Anconia, Scudder, Ann. Rep. Chief Eng. 1876, Append. JJ, p. 514 (1876).

Anconia inhabits the arid regions of the South-western United States, where three species are known to occur, and possibly extends to Northern Mexico. These insects resemble some of the members of the genus *Heliastus* in a few of their characteristics. They may be known by the subjoined table:—

Table for separating the Species of Anconia.

A. Tegmina and wings very long and narrow, the former evenly and rather profusely mottled with brown. Entire insect often pale green or greenish . . . . . 1. *integra,* Scudd.

AA. Tegmina and wings shorter and broader, general colour testaceous or cinereous, the tegmina less profusely mottled with brown.

b. Size small; the tegmina with very few maculations. Hind wings faintly cærulean . . . . . [2. *grisea,* sp. n.]

bb. Size large, robust; the tegmina conspicuously maculate. Hind wings deep cærulean . . . . . [3. *cæruleipennis,* sp. n.]

1. **Anconia integra,** Scudd. (Tab. II. figg. 12, 12 *a*, *b*, ♀.)

Anconia integra, Scudd. Ann. Rep. Chief Eng. 1876, Append. JJ, p. 515 (1876)[1].

Hab. North America[1], various localities in Arizona and South-eastern California (*coll. L. Bruner*).

This insect is very variable in colour, ranging from pale testaceous to pea-green, with or without a paler decussate marking on the disc of the pronotum. It is the most southern of the three forms here recognized, and most certainly reaches Mexican territory.

[2. **Anconia grisea,** sp. n.

Most nearly related to *A. integra*, from which it differs in its broader and shorter tegmina, which are but sparsely maculate with brown. The entire insect is dark cinereous, instead of testaceous or greenish, and the sides of the pronotum and pleura are conspicuously mottled with fuscous. The hind tibiæ are cinereous and conspersed with dark brown or dull black, while the hind femora have the apex and two well-defined bands across the upper edge of the same colour.

Length of body, ♂, 20; of pronotum 4, of tegmina 20, of hind femora 11·5 millim.

Hab. North America, Antelope Valley, California (*coll. L. Bruner*).

A single male.]

[3. **Anconia cæruleipennis,** sp. n.

A much more robust insect than *A. integra*, and at once recognizable on account of its cærulean wings and cinereous body. The markings on the hind femora are even more pronounced than in *A. grisea*. As compared with *A. integra*, the present species has the valves of the ovipositor more robust and blunter, while the hind lobe of the pronotum is much broader and ample. The head is also larger, the frontal costa is broader and less contracted below the ocellus, and the mesosternal lobes are separated by a space a trifle wider than long. The hind femora are moderately robust.

Hab. North America, Hawthorne, Nevada (*H. F. Wickham, coll. L. Bruner*).

A single female. Possibly *A. grisea* is the male of this insect, but if so the discrepancy in size between the sexes is much greater than it is in *A. integra*.]

[RAMONA *, gen. nov.

Body slender, depressed, viewed from the side greatly strangulate. Head short, but quite high, the eyes prominent, subglobular, nearly as wide apart above as the diameter of one of them; occiput short, the vertex broad, the cheeks below them considerably longer than they are, very shallowly sulcate, the bounding walls blunt and somewhat approaching a little in advance of the middle of the sulcation, the centre provided with a low, but perfectly plain, longitudinal carina that continues over the occiput to the front edge of the pronotum; frontal costa nearly obliterated below the ocellus; lateral facial carinæ strong, straight, beginning near the middle of the front edge of the eyes and reaching the sides of the base of the clypeus. Pronotum smooth, much constricted in the middle, the median carina present only as a very faint line on the posterior lobe; anterior edge broadly rounded, posterior margin obtuse-angulate, lateral carinæ wanting, the lower posterior margin broadly rounded. Tegmina and wings

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* A geographical name.

rather long and narrow, the former sparsely veined on their apical two-thirds, where they are semi-membranous, the intercalary vein entirely wanting; wings without a fuscous band or other markings. Hind femora long and slender; tibiæ coarse and provided with unusually long, nearly straight, apical spurs, the spines few and prominent, eight in number on the outer edge. Mesosternal lobes widely separated.

1. **Ramona deserticola,** sp. n.

General colour pale cinereo-testaceous, slightly varied on the pronotum, tegmina, and hind femora with brown blotches. Wings very pale cæruleous basally, becoming vitreous apically, the veins pale, except along the costal field, where some of them are more or less dark. The brown markings of the pronotum are v-shaped, one on the anterior lobe of the disc, a narrow line along the upper edge of the sides and another anteriorly towards the lower edge; on the tegmina a series of rather large elongate patches anteriorly, and a number of scattered smaller ones along the posterior edge. The hind femora show traces of a basal, median, and præapical bands; the hind tibiæ are testaceous, with a plumbeous tinge about the base of the pale dark-tinged spines.

Length of body, ♀, 31; of pronotum 6, of tegmina 32, of hind femora 16 millim.

Hab. North America, Indio, California (*H. F. Wickham, coll. L. Bruner*).

A single female. This insect, while bearing a general resemblance to the different species of *Anconia*, is at once separable from all of them by its longer and more slender loosely jointed legs, the longer and deeper head, with more elevated occiput, and the deeply and coarsely pitted pleura of the meso- and metathorax.]

SPHINGONOTUS, Fieber.

Œdipoda, auctt. (in part.).

Sphingonotus, Fieber, Syn. Europ. Orthopt. p. 24 (1845).

Sphinconotus, L. H. Fischer, Orthopt. Eur. p. 401 (1854); Stål, Recens. Orthopt. i. p. 118 (1873).

The Old-World genus *Sphingonotus* is represented by at least three species in the central regions of America. They are all small and inconspicuous insects that might readily be overlooked by collectors. The following table will aid in their determination:—

Table for separating the Species of Sphingonotus.

A. Wings neither fasciate nor maculate, either hyaline or with the base cærulean. (Cuba.) . . . . . [1. *cærulans,* Sauss.]

AA. Wings varied with fuscous, their disc pale blue.

b. Wings not banded, but with a fuscous patch beyond the middle, or the apex fuscous. (Jamaica.) . . . . . [2. *jamaicensis,* Sauss.]

bb. Wings provided with an interrupted arcuate fuscous or cloudy band. (West Indies and Mexico.) . . . . . 3. *haitensis,* Sauss.

[1. **Sphingonotus cærulans,** Sauss.

Sphingonotus cærulans, var. *cubensis,* Sauss. Prodr. Œdip. pp. 200, 201 (1884) [1]; Bolivar, Orthopt. Cuba, p. 28 (1888) [2].

Hab. West Indies, Cuba [1 2].

This insect is not represented in the material studied by me.]

[2. **Sphingonotus jamaicensis,** Sauss.

Sphingonotus jamaicensis, Sauss. Prodr. Œdip. p. 202 (1884) [1].

Hab. West Indies, Jamaica [1], Kingston (*T. D. A. Cockerell*: ♀; *coll. L. Bruner*).]

3. **Sphingonotus haitensis,** Sauss.

Sphingonotus haitensis, Sauss. Prodr. Œdip. p. 202 (1884) [1]; Addit. Prodr. Œdip. p. 81 (1888) [2]; Bolivar, Orthopt. Cuba, pp. 28, 29 (1888) [3].

Hab. Mexico [1], Oaxaca (*Mus. Brit.*), Mitla (*C. C. Deam, coll. U.S. Nat. Mus.*: 1 ♂, 1 ♀).—West Indies, Haiti, San Domingo, and Cuba [2].

HELIASTUS, Saussure.

Œdipoda, Latr. (in part.).

Heliastus, Saussure, Prodr. Œdip. p. 212 (1884); Scudder, Psyche, ix. p. 45 (1900).

A characteristic Mexican and Central-American Œdipodine genus that crosses the international border all the way from the Gulf of Mexico to the Pacific Ocean. The species readily fall into two distinct groups—one of which is represented in arid regions and the other in more or less humid districts. The described forms may be separated by the annexed table:—

Table for separating the Species of Heliastus.

A. Pronotum with the posterior lateral angles decidedly produced downwards into a broadly rounded process.
  b. Wings provided with a more or less distinct fuscous band.
    c. Disc of wings vermilion or rose-colour . . . . . 1. *sumichrasti,* Sauss.
    cc. Disc of wings yellow or citron . . . . . 2. *guatemalæ,* Sauss.
  bb. Wings lacking the fuscous band . . . . . 3. *venezuelæ,* Sauss.

AA. Pronotum without the downward projecting process, the angle broadly rounded.
  b. Disc of the wings vermilion. Sexes not greatly unequal in size.
    c. Wings provided with a moderately plain fuscous band . . . . 4. *costaricensis,* Rehn.
    cc. Wings without a definite transverse band.
      d. Hind tibiæ red apically, annulate with testaceous and black basally. Hind femora robust . . . . . 5. *benjamini,* Caud.
      dd. Hind tibiæ infuscate throughout . . . . . 6. *aztecus,* Sauss.

bb. Disc of wings pale greenish-yellow or hyaline. Sexes very unequal in size.

c. Antennæ at least two-thirds as long as the hind femora. Descending lobes of the pronotum apically well rounded.

d. Tegmina and wings elongate, extending much beyond the apex of the abdomen in both sexes . . . . . 7. *aridus*, Bruner.

dd. Tegmina and wings shorter, only slightly surpassing the tip of the abdomen . . . . . 8. *californicus*, Thom.

cc. Antennæ only half as long as the hind femora. Descending lobes of the pronotum apically truncate . . . . . [9. *minimus*, Scudd.]

1. **Heliastus sumichrasti,** Sauss.

Œdipoda sumichrasti, Sauss. Rev. et Mag. Zool. 1861, p. 324[1]; Thomas, Acrid. N. Am. p. 214 (1873)[2].

Heliastus sumichrasti, Sauss. Prodr. Œdip. p. 213 (1884)[3]; Addit. Prodr. Œdip. p. 90 (1888)[4]; Caudell, Proc. U.S. Nat. Mus. xxvii. p. 951 (1904)[5].

Œdipoda speciosa, Walk. Cat. Derm. Salt. Brit. Mus. iv. pp. 735, 736 (1870)[6].

Œdipoda tentatrix, Walk. op. cit. v., Suppl. pp. 74, 75 (1871)[7].

Hab. North America, Texas[5].—Mexico[1 3 4], temperate and hot regions, widely distributed, Oaxaca[7]; Guatemala[1 3 4]; Honduras[1 3 4 6].

This is the commonest and by far the most widely distributed representative of the genus, and if we regard *H. guatemalæ*, *H. venezuelæ*, and *H. costaricensis* as varieties of it, the most variable as well. To this species also belong *Œdipoda tentatrix* and *Œ. speciosa*, Walk.

2. **Heliastus guatemalæ,** Sauss.

Heliastus guatemalæ, Sauss. Addit. Prodr. Œdip. p. 91 (1888)[1].

Hab. Mexico, near Parian (*C. C. Deam*); Guatemala[1], Amatitlan (*Jas. S. Hine, coll. L. Bruner*).

The specimens of this species seem to differ from the preceding only in wing-colour.

3. **Heliastus venezuelæ,** Sauss.

Heliastus venezuelæ, Sauss. Prodr. Œdip. p. 213 (1884)[1]; Bruner, Bull. Lab. Nat. Hist. Iowa, iii. p. 64, t. 3. fig. 4 (1895)[2]; Giglio-Tos, Boll. Mus. Zool. Univ. Torino, xii. no. 301, p. 3 (1897)[3].

Hab. Nicaragua[2]; Panama[7], Darien[3].—South America, Colombia[1], Venezuela[1].

Like the preceding, this seems also to be but a variety of *H. sumichrasti.*

4. **Heliastus costaricensis,** Rehn.

Heliastus costaricensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 402, figg. 1–3[1].

Hab. Costa Rica, Turrialba (*coll. U.S. Nat. Mus.*[1]).

That which has been said concerning *H. guatemalæ* and *H. venezuelæ* might also be remarked concerning the present insect. Although the hind process of the lateral lobes of the pronotum is but poorly or not at all developed in the present form, it gradually becomes less apparent as we pass from *H. sumichrasti* to *H. costaricensis*.

5. **Heliastus benjamini,** Caudell.

Heliastus benjamini, Caud. Proc. U.S. Nat. Mus. xxviii. p. 474, fig. 6 (1905) [1].

Hab. North America, Nogales and Huachuca Mts., Arizona (*coll. U.S. Nat. Mus.* [1]).

This form may be but a variety of *H. aztecus,* which is distributed over Northern Mexico, and, like *H. sumichrasti,* is rather variable in size and colouring.

6. **Heliastus aztecus,** Sauss.

Heliastus aztecus, Sauss. Prodr. Œdip. p. 214 (1884) [1]; Rehn, Trans. Amer. Ent. Soc. xxix. p. 11 (1902) [2]; Proc. Acad. Nat. Sci. Philad. 1904, p. 528 [3].

Hab. Northern Mexico [1], Durango or Sinaloa (*Forrer*), Monterey, Nuevo Leon [2], Victoria, Tamaulipas [3].

The mottling of the tegmina is very similar to that of several species of *Trimerotropis,* especially *T. vinculata* and its allies.

7. **Heliastus aridus,** Bruner. (Tab. II. fig. 10, ♀.)

Thrincus aridus, Bruner, Proc. U.S. Nat. Mus. xii. p. 78, t. 1. figg. 2, 3 (1890) [1].
Heliastus aridus, Scudd. Canad. Ent. xxix. p. 75 (1897) [2]; Psyche, ix. p. 46 (1900) [3].

Hab. North America, Texas to California [1–3].—Mexico, Tepic (*coll. Calif. Acad. Sci.*).

8. **Heliastus californicus,** Thomas.

Thrincus californicus, Thom. Bull. U.S. Geol. Surv. Terr. no. 2, ser. 1, p. 66 (1874) [1]; Glover, Illustr. N. Am. Ent., Orthopt. t. 17. figg. 6, 7 (1874) [2]; Bruner, Proc. U.S. Nat. Mus. xii. p. 187 (1890) [3].
Heliastus californicus, Scudd. Canad. Ent. xxix. p. 75 (1897) [4]; Psyche, ix. p. 46 (1900) [5].

Hab. North America, various Californian localities [1–5], St. George, Utah [5]; Lower California, Cape San Lucas [5].—Mexico, Saltillo, Sonora [5].

The collections before me do not contain specimens of this insect. It is intermediate in size between *H. aridus* and *H. minimus.*

[9. **Heliastus minimus,** Scudd.

Heliastus minimus, Scudd. Psyche, ix. p. 46 (1900) [1].

Hab. North America, Palm Springs, California (*A. P. Morse* [1]).

Scudder says of this insect: "The species is peculiar for its small size, short antennæ, slender hind femora, &c." It very likely occurs in Mexico as well.]

CŒLOPTERNA, Stål.

Acrydium (in part.), De Geer.
Paulinia, Blanchard, in D'Orbigny's Voy. dans l'Amér. Mérid. vi. 2, Ins. p. 216 (1837–43).
Cœlopterna, Stål, Öfv. Vet.-Ak. Förh. xxx. 4, p. 53 (1873).

The genus *Cœlopterna* is confined to Tropical America, although it occurs in Argentina along the valley of the Parana River nearly or quite to its mouth. The members of this group live upon aquatic plants in a manner similar to many of the Tettigiinæ and some of the Acridiinæ. In this semiaquatic life these insects are no doubt obliged frequently to swim, hence the peculiar development of the hind tibiæ. Possibly Blanchard's name *Paulinia* should be used for this genus instead of Stål's later one.

1. **Cœlopterna acuminata,** De Geer.

Acrydium acuminatum, De Geer, Mém. Ins. iii. p. 501. 19, t. 42. fig. 10 (1773) [1].
Cœlopterna acuminata, Stål, Recens. Orthopt. i. p. 145 (1873) [2]; Giglio-Tos, Boll. Mus. Zool. Univ. Torino, ix. no. 184, p. 5 (1894) [3]; xii. no. 301, p. 3 (1897) [4].
Cœlopterna acuminata, var. *brevipennis,* Giglio-Tos, loc. cit. ix. no. 184, p. 7 (1894) [5].
Cœlopterna stalii, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 277 (1875) [6].
Paulinia mucosa, Blanch. in D'Orbigny's Voy. dans l'Amér. Mérid. vi. 2, Ins. p. 216, t. 27. fig. 6 [7].

Hab. PANAMA, Laguna Pita, Darien (*Dr. E. Festa*).—SOUTH AMERICA to Argentina.

While spending some time in Argentina several years ago the writer collected a number of individuals of this species in Rosario de Santa Fé, after nightfall, where they had been attracted by the electric lights. It would appear, therefore, that the insect is more or less nocturnal in its habits.

[TANAOCERUS, gen. nov.*

Size small, the body more or less verrucose or rugose, fusiform, neither depressed nor compressed; pronotum ample, higher than long, the hind margin not prolonged above, without lateral carinæ, but with the median carina strong. Abdomen strongly carinate.

Head small, the face nearly vertical, occiput short; eyes subspherical, fairly prominent, not quite so long as the cheeks below; vertex broadly and shallowly sulcate, nearly as broad as the diameter of one of the eyes, not expanding anteriorly and bordered at the sides with rather coarse parallel carinæ which converge abruptly in front and continue as the carinæ of the frontal costa; lateral foveolæ nearly obsolete; ocelli contiguous to the eyes, small and inconspicuous; frontal costa prominent above the ocellus, obsolete below, or continued as a single inconspicuous carina to the clypeus; lateral facial carinæ prominent, evenly divergent; antennæ composed of about 25 or 26 joints, very slender and elongate, the basal and second joints unusually large and robust. Pronotum transversely rugose, short, high, without lateral carinæ, but with the median carina strong throughout; anterior edge very slightly advanced upon the occiput, the posterior margin sinuately crenulate, but not prolonged to the rear. Meso- and

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* This genus was not included in the Synopsis, *anteà*, pp. 114–119.

metathorax provided above at the hind edge with a series of four or five short prominent longitudinal carinæ, which are apparent also on the first and second abdominal segments. Legs moderately large or small; the hind femora considerably shorter than the abdomen, the pinnæ of the outer face few and mostly composed of the lower row, the upper ones being irregular and nearly obliterated; hind tibiæ with 11 spines on the inner row and 13 on the outer row. Mesosternal lobes very widely separated, the inner margin of the lobes themselves broadly and obliquely rounded. Valves of the ovipositor exserted, rather coarse and nearly straight, provided on both the outer and inner edges with coarse teeth or crenulations.

1. **Tanaocerus koebelei,** sp. n.

General colour pale cinereo-testaceous or rufous, varied on the sides of the abdomen and pronotum, on the dorsum of the mesothorax, on the middle of the abdomen, and on the legs with fuscous and black.

Occiput more or less transversely rugose and provided with a faint longitudinal carina that fades away in the posterior end of the sulcus of the vertex. Vertex in front provided with two short, converging carinæ, which branch from the walls of the frontal costa and fastigium, where the two meet, these short carinæ, however, do not quite unite at their apices. Frontal costa prominent, but narrow, deeply sulcate. Antennæ with the two basal joints heavy, the others very slender and elongate, four or more times as long as broad, alternately pale and obscure, nearly twice as long as the head and pronotum together. Median carina of thorax finely sulcate. Dorsum of meso- and metathorax lapping over the pleurites and with the lower posterior portions broadly rounded. Insect entirely apterous. Hind femora triannulate with fuscous, the bands most pronounced across the upper edge; hind tibiæ testaceous; anterior and middle femora and tibiæ each biannulate with fuscous. All the legs, the hind tibiæ especially, rather strongly hirsute.

Length of body, ♀, 18–23; of antennæ 11, of pronotum 3·1, of hind femora 9 millim.

Hab. NORTH AMERICA, Panament Valley, California (*A. Koebele, in U.S. Nat. Mus.*).

Two females, captured in the month of April. This remarkable insect bears a striking resemblance in many respects to the African genus *Eneremius*, Saussure, and is so very different from the three other N.-American Eremobiine genera that one cannot help but wonder whether there are still others to be met with in the desert regions of the South-western United States and Northern Mexico.]

BRACHYSTOLA, Scudder.

Brachypeplus, Charpentier, Orthopt. descr. et pict., fasc. ix. (1841–1845); Girard, in Marcy's Expl. Red Riv. p. 231 (1854) (nec Erichson).

Brachystola, Scudder, Bull. U.S. Geol. Surv. Terr. ii. p. 267 (1876); Saussure, Prodr. Œdip. p. 240 (1884).

The representatives of this genus are mostly confined to the arid regions of Middle and Northern Mexico and the south-western portions of the United States. Judging from the rather large number of species represented by the small amount of material at hand from the former country, there is scarcely any doubt but that additional forms will come to light when Mexico has been more carefully examined. A considerable percentage of the species seem to be rather restricted in their distribution. The subjoined table will aid in their separation.

Table for separating the Species of Brachystola.

A. Posterior margin of the disc of the pronotum truncate or but gently rounded. The tegmina more or less profusely mottled with black.

b. Tegmina rather sparsely mottled. Insect very large and robust. (Guaymas, Mexico.) . . . . . 2. *ponderosa*, sp. n.

bb. Tegmina more profusely mottled. Insects variable in size.

c. Smaller; general colour green or greenish; the disc of the pronotum regularly and coarsely granulate throughout. (Mexico northward and New Mexico.) . . . . . 4. *virescens*, Charp.

cc. Larger; general colour more tinged with testaceous and rufous; the disc of the pronotum less regularly granulate, especially posteriorly.

d. Tegmina rather sparsely and irregularly mottled; the rugosities of the pronotum large, profuse, sharp, and distinct, not running together so as to form irregular ridges. (Lower California and Mexico in the vicinity of Mazatlan.) . . . . . 3. *intermedia*, sp. n.

dd. Tegmina usually regularly and profusely mottled; the rugosities of the pronotum blunter and often running together, so as to form low tortuous ridges, much weaker on the hind lobe. (U.S. from Texas northward.) . . . . . 1. *magna*, Girard.

AA. Posterior margin of the disc of the pronotum decidedly rounded or even angulate. The tegmina without mottling, the background dark and the veins light.

b. Pronotum with its posterior edge broadly and evenly rounded, not margined on the disc, which is nearly smooth on its posterior third . . . . . 5. *mexicana*, sp. n.

bb. Pronotum with its posterior edge angulate or subangulate, sometimes provided with a very marked margin on the disc behind.

c. Larger; the pronotum decidedly tectate and when viewed laterally evenly arcuate, its posterior edge subangulate and provided with a well-marked border, the hind lobe granulate above. (Durango or Sinaloa.) . . . . . 6. *behrensi*, Scudd.

cc. Smaller; the pronotum not decidedly tectate, and when viewed laterally nearly straight, its posterior edge angulate and without a border, the hind lobe smooth. (Tepic.) . . . . . 7. *eiseni*, sp. n.

1. **Brachystola magna**, Girard.

Brachypeplus magnus, Gir. in Marcy's Expl. Red River, p. 231, t. 15. figg. 1–4 (1853)[1]; Thomas, Proc. Acad. Nat. Sci. Philad. 1870, p. 79[2]; Ann. Rep. U.S. Geol. Surv. Terr. ii. p. 271 (1871)[3]; Scudd. Rep. U.S. Geol. Surv. Nebr. p. 250 (1872)[4]; Glover, Illustr. N. Am. Ent., Orthopt. t. 7. fig. 11 (1872)[5].

Brachystola magna, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 267 (1876)[6]; Sauss. Prodr. Œdip. pp. 241, 242 (1884)[7]; Addit. Prodr. Œdip. pp. 163, 164 (1888)[8].

Hab. NORTH AMERICA, plains east of the Rocky Mountains from Wyoming and South Dakota to Texas and New Mexico [1–8].—? MEXICO.

It is quite likely that the Mexican individuals referred to this species belong either to *B. intermedia* or *B. virescens*, though some of them may appertain to *B. magna*, as undoubted specimens of that insect occur in both Texas and New Mexico not far from the international boundary-line. Apart from *B. magna*, which has a wide distribution, all the other members of the genus appear rather restricted to special localities.

2. **Brachystola ponderosa,** sp. n.

Very large and robust, with ample pronotum, in which the granulations of the disc are numerous, fine, and rather evenly distributed. Tegmina with comparatively few, but large maculations.

Occiput rounded, smooth, without the definite median longitudinal carina and transverse rugæ found in *B. magna*; the fastigium of the vertex at about a right angle (♂) or a trifle obtuse (♀), the bounding walls blunt; frontal costa narrow above, evenly expanding beneath, sulcate to a little below the ocellus. Eyes small, not prominent. Antennæ of moderate length, rather stout, filiform. Pronotum moderately elongate, the disc about twice as wide behind as in front, the median and lateral carinæ prominent, the former evenly and roundly arcuate when viewed in profile, the latter somewhat sinuate near the middle; posterior edge broadly and gently rounded, the centre very slightly hollowed out. Tegmina about as in *B. magna*, but with few mottlings. Hind femora very large and robust in the male, more slender in the female. Apex of male abdomen produced into a slender beak-like process, which is deeply sulcate above and gently notched at the tip.

General colour (presumably, as the specimens before me have been immersed in spirits) greenish, varied with testaceous, ferruginous, and piceous in the pattern found on specimens of *B. magna*. Face between the lateral carinæ pale testaceous, the lower portion of the costa darker. Antennæ pale, the apical portion somewhat infuscate.

Length of body, ♂ 53, ♀ 60; of pronotum, ♂ 17·5, ♀ 23; of tegmina, ♂ & ♀, 10; of hind femora, ♂ 34, ♀ 30; of antennæ, ♂ 22, ♀ 23 millim.

Hab. MEXICO, Guaymas (*coll. Calif. Acad. Sci.*).

Two males and two females. This species seems to be considerably larger than its nearest ally, *B. magna*, and in life undoubtedly would be still larger than the dimensions given here. It seems to be more uniformly coloured than *B. magna*, although the knees of the hind femora are decidedly blacker than in that insect. *B. ponderosa* seems to be rather restricted in its distribution, since no other specimens have come to the present writer's notice.

3. **Brachystola intermedia,** sp. n.

This form is most nearly related to *B. magna*, but differs from that species in its somewhat smaller size and more robust form. In *B. intermedia* the pronotum is correspondingly shorter and broader, and has the disc more evenly and coarsely granulose, while the tegmina are more nearly circular than in *B. magna*. It is also of a more uniform brownish-ferruginous colour than are any of the other species here treated. The synoptic table given above will show quite clearly the chief characteristics of each, therefore no further description of *B. intermedia* is necessary.

Length of body, ♀, 47–50; of pronotum 14, of tegmina 8, of hind femora 24 millim.

Hab. MEXICO, Magdalena, Sonora? (*U.S. Biol. Surv.*), Mazatlan (*Woodruff*).

Three female specimens. It may reach South-western Arizona in the vicinity of the Huachuca Mountains. However, no members of the genus have been examined by me from that region.

4. **Brachystola virescens,** Charp.

Brachypeplus virescens, Charp. Orthopt. descr. et pict. t. 51 [1]; Glover, Illustr. N. Am. Ent., Orthopt. t. 9. fig. 3 (1872) [2]; Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 250 (1873) [3].
Brachystola virescens, Bruner, Rep. U.S. Ent. Comm. iii. p. 58 (1883)[4]; Sauss. Prodr. Œdip. p. 242 (1884) [5]; Addit. Prodr. Œdip. p. 163 (1888) [6]; Scudd. Cat. Orthopt. U.S. p. 44 (1900) [7].
Brachystola magna, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 528 [8].

Hab. North America, Texas and New Mexico [6 7].—Mexico [1–5], Colonia Garcia (*C. H. T. Townsend*), and Casas Grandes, Chihuahua [8].

The present species is apparently confined to the northern part of Chihuahua, Southern New Mexico, and Western Texas. It is much smaller than *B. magna*, *B. intermedia*, and *B. ponderosa*, in which group it falls. None of the specimens examined are uniformly green, as Charpentier's figures would indicate. A specimen received from Mr. Rehn, who reported it as *B. magna* (loc. cit.), is referred here. The female has three fuscous patches on the outer disc of the hind femora, as in *B. mexicana*, a character not found in *B. magna*.

5. **Brachystola mexicana,** sp. n. (Tab. II. fig. 4, ♀.)

A moderately small, but very robust insect, with broadly rounded hind margin of pronotum and small tegmina, the ground-colour of which is dark brown, instead of pale ferruginous or testaceous.

Head of moderate size, much broader below than above, the occiput smooth, rounded; vertex between the unusually small eyes wider apart than twice the longest diameter of one of them, the fastigium in nowise sulcate nor bordered with lateral carinæ, roundly continuous with the prominent frontal costa; the latter evenly expanding below, gently sulcate at and for a short distance above the ocellus. Antennæ short, about reaching the middle of the pronotum, their foveæ deep and rendered even more conspicuous by being dark piceous in colour. Pronotum ample, the disc depressed on the anterior lobe, bulging on the posterior lobe, sparsely and evenly studded with polished circular elevations, except in the middle near the posterior extremity, where the surface is almost smooth; median carina high and prominent, except near the posterior extremity; lateral carinæ also quite prominent and strongly divergent. Tegmina circular, small, dark-coloured, the veins pale. Abdomen very broad at the base, tapering rapidly, short. Hind femora slender, inner disc dark, the outer one with three dark patches—one basal, one median, and the other apical. Knees with the usual black lunules. Hind tibiæ with 10 irregularly arranged small spines in the outer row.

General colour brownish-testaceous (probably with a greenish tinge in life). Sides of the pronotum more or less piceous. Dorsum of abdomen brunneous, with two paler bands, one on either side near the middle. Other markings as given in general description.

Length of body, ♀, 40; of pronotum 15, of tegmina 7·50, of hind femora 19, of antennæ 13 millim.

Hab. Mexico, the exact locality not known (*coll. U.S. Nat. Mus.*).

The single specimen upon which the present species is based bears the simple label "Mexico." It presumably comes from the northern portion, perhaps from either Sonora or Chihuahua.

6. **Brachystola behrensi,** Scudd. (Tab. II. fig. 6, ♀.)

Brachystola behrensi, Scudd. Proc. Bost. Soc. Nat. Hist. xix. pp. 33, 34 (1877) [1]; Sauss. Addit. Prodr. Œdip. pp. 163, 164 (1888) [2]; Scudd. Proc. Bost. Soc. Nat. Hist. xxvii. pp. 206, 217 (1896) [3].

Hab. MEXICO [1–3], Sinaloa (*J. Behrens*), Durango or Sinaloa (*Forrer*: 1 ♂, 3 ♀).

This species is readily distinguished from *B. magna* and its allies by the prolonged and broadly rounded hind margin of the pronotal disc, and by the pale-veined dark tegmina; and from the following, *B. eiseni*, by its larger size, and paler and greener colour.

7. **Brachystola eiseni,** sp. n. (Tab. II. fig. 5, ♀.)

A rather small, slender, pale vinaceous-brown species, with angulate, posteriorly bordered pronotum.

Head fairly robust, occiput smooth, without a well-defined longitudinal median carina; vertex broad, the fastigium in nowise sulcate, its bounding walls not elevated, the insect in this respect similar to *B. mexicana*; eyes rather large and fairly prominent for the genus, nearly (♂) or quite (♀) as long as the cheeks below them; frontal costa prominent, its upper end roundly continuous with the fastigium, the sides rapidly and evenly diverging below, shallowly and narrowly sulcate, the surface minutely punctate (♂) or finely aciculate (♀) above and on the sides of the ocellus. Pronotum elongate, rather narrow in the male, but moderately broadly expanding posteriorly in the female; median and lateral carinæ prominent, nearly straight, disc with the anterior lobe provided with fairly prominent raised points, the posterior one nearly smooth, front margin a little advanced upon the base of the occiput, hind margin angulate, in the male a little obtuse, in the female slightly acute. Tegmina rather larger than usual, especially in the male, the background dark with paler veins. Hind femora robust and longer in the male, more slender and shorter than the abdomen in the female. Last ventral segment of male abdomen with the narrowed apical portion gently bent downward and rather deeply but narrowly fissured. Hind tibiæ provided with 9 spines in the outer row.

General colour very pale vinaceous-brown, inclined to lavender on the head, disc of pronotum, and legs. Antennal grooves, centre of fovea of frontal costa below ocellus, the sulci between face and cheeks, and the genicular lunulæ of hind femora black; pronotal carinæ and greater portion of lateral lobes piceous; a narrow stripe on each side of the face, together with the immediate border of the sides of the pronotum, dirty white; abdomen largely dark vinaceous-brown above, pale beneath, the dorsum at each side of the middle marked with a series of prominent, quadrate, whitish patches, one to each segment. Lower sulcus of hind femora testaceous. Antennæ pale, darker apically.

Length of body, ♂ 40, ♀ 44; of pronotum, ♂ 15·5, ♀ 18; of tegmina, ♂ 9, ♀ 6·5; of hind femora, ♂ 26, ♀ 20 millim.

Hab. MEXICO, Tepic (*Gustav Eisen, coll. Calif. Acad. Sci.*: 1 ♂, 1 ♀).

This species is dedicated to its collector, who has done much towards bringing to light many interesting west-coast Mexican insects.

[TYTTHOTYLE, Scudder.

Thrincus, Bruner, Proc. U.S. Nat. Mus. xii. p. 79 (1890) (part.).
Tytthotyle, Scudder, Canad. Ent. xxix. p. 74 (1897).

Like several other North-American Œdipodine genera, this monotypic genus is confined to the region along the international border between the United States and Mexico.

1. **Tytthotyle maculata,** Bruner. (Tab. II. fig. 9, ♀.)

Thrincus (?) *maculatus,* Bruner, Proc. U.S. Nat. Mus. xii. pp. 79, 89 (1890) [1].
Tytthotyle maculata, Scudd. Canad. Ent. xxix. p. 75 (1897) [2].

Hab. North America [1 2], Yuma and Needles, California (*H. F. Wickham*).

This insect appears to be rather restricted in its range, and, at the same time, quite rare. It has been reported but a few times, and then only in small numbers]

PHRYNOTETTIX, Uhler.

Ephippigera, Haldeman, in Stansbury's Expl. and Surv. Great Salt Lake, Ins. p. 371 (1852) (nec Latreille).
Phrynotettix (Uhler, MSS.), Glover, Illustr. N. Am. Ent., Orthopt. t. 6. fig. 25 (1872).
Eremobia, Thomas, Rep. U.S. Geol. Surv. W. 100th Merid. v. p. 886 (1875) (nec Serv.).
Haldmanella, Saussure, Addit. Prodr. Œdip. p. 153 (1888).
Haldemanella, Bruner, Proc. U.S. Nat. Mus. xii. p. 81 (1890).
Haldemannia, Townsend, Ins. Life, vi. p. 31 (1893).

The locusts which comprise the present genus are typical denizens of deserts, and are especially characteristic of the arid regions of Northern Mexico and the Southwestern United States. While the individuals of each form vary considerably, among themselves, they nevertheless offer fairly good characters by which they may be assigned to their respective species. Being so toad-like in their actions and general appearance, and frequenting as they do such out-of-the-way localities, comparatively few specimens have come into the hands of orthopterologists. Undoubtedly still other forms will eventually be added to those here recorded.

Table for separating the Species of Phrynotettix.

A. Lower edge and inner face of hind femora largely dark brown or black. Tegmina squamiform, lateral, in the males scarcely reaching the middle of the second abdominal segment.
  b. Smaller, with the pronotum less strongly rugose; the hind femora in the female 11–17 mm. long.
    c. Pronotum of ♀ 11–14 mm. long . . . . . 2. *tschivavensis,* Hald.
    cc. Pronotum of ♀ 17 mm. long . . . . . [3. *taosanus,* Rehn.]
  bb. Larger, with the pronotum strongly rugose; the hind femora in the female 16–20 mm. long.
    c. Insect not excessively robust. Pronotum of ♀ 18–20 mm. long. 4. *magnus,* Thom.
    cc. Insect, especially the female, excessively robust. Pronotum of ♀ 16–17 mm. long . . . . . 1. *verruculatus,* Uhl.
AA. Lower edge and inner face of hind femora pallid. Tegmina of males with their dorsal edges touching or overlapping, one-half to two-thirds as long as the abdomen . . . . . 5. *robustus,* Bruner.

1. **Phrynotettix verruculatus,** Uhler.

Phrynotettix verruculata (Uhler), Glover, Illustr. N. Am. Ent., Orthopt. t. 6. fig. 25 (1872) [1].
Haldemanella verruculata, Scudd. & Ckll. Proc. Dav. Acad. Sci. ix. p. 39 (1902) [2].
Phrynotettix tshivavensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1902, p. 596 (in part.) [3].

Hab. North America, Pecos River, Texas [1], Taos Valley, New Mexico, and Phœnix, Arizona (*coll. L. Bruner*).—Mexico, San Blas (*Woodruff*).

The synoptic table given above indicates quite clearly the differences between the various species as here recognized.

2. **Phrynotettix tschivavensis,** Hald. (*Haldemanella tchivavensis,* Tab. II. fig. 1, ♂.)

Ephippigera tcivavensis, Hald. in Stansbury's Expl. and Surv. Great Salt Lake, Ins. p. 371, t. 10. fig. 3 (1852) [1]; Walk. Cat. Derm. Salt. Brit. Mus. iii. p. 545 (1870) [2].
Haldmanella tschivavensis, Sauss. Addit. Prodr. Œdip. p. 153 (1888) [3].
Haldemanella tschivavensis, Scudd. Cat. Orthopt. U.S. p. 44 (1900) (in part.) [4].

Hab. North America, Silver City, New Mexico (*H. Marsh*), and Needles, California (*H. F. Wickham, coll. L. Bruner*).—Mexico [1], Colonia Garcia, Chihuahua (*C. H. T. Townsend, coll. L. Bruner*).

Possibly some of the other references to insects of this group should be included in the above synonymy. The present species is the smallest of the described forms.

[### 3. **Phrynotettix taosanus,** Rehn.

Phrynotettix taosanus, Rehn, Proc. Acad. Nat. Sci. Philad. 1902, pp. 595, 597, 598 [1].

Hab. North America, Taos Valley, New Mexico [1] (*U.S. Nat. Mus.*).

This species is not known to the present writer. It may also be an insect of sufficiently wide distribution to bring it into Mexican territory.]

4. **Phrynotettix magnus,** Thomas.

Eremobia magna, Thomas, Rep. U.S. Geol. Surv. W. 100th Merid. v. p. 886, t. 43. fig. 5 (1875) [1].
Haldmanella tschivavensis, Sauss. Addit. Prodr. Œdip. p. 153 (1888) (in part.) [2].
Haldemanella tschivavensis, Scudd. Cat. Orthopt. U.S. p. 44 (1900) (in part.) [3].
Phrynotettix tshivavensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1902, pp. 596, 597 (in part.) [4].

Hab. North America, Southern Arizona [1].—Mexico, Sonora (*coll. U.S. Nat. Mus.*).

The only specimen of what is supposed to be the species described by Thomas at hand is a female that has been preserved in spirits and subsequently pinned. It simply bears the label "Sonora, Mexico." It readily separates from its nearest ally, *P. verruculatus,* by the characters given in the synoptic table.

5. **Phrynotettix robustus,** Bruner. (*Haldemanella robusta*, Tab. II. figg. 2, ♂; 3, ♀.)

Haldemanella robusta, Bruner, Proc. U.S. Nat. Mus. xii. p. 81 (1890) [1].
Haldemannia robusta, Towns. Ins. Life, vi. p. 31 (1893) [2].
Haldemanella tschivavensis, Scudd. Cat. Orthopt. U.S. p. 44 (1900) (in part.) [3].
Phrynotettix tshivavensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1902, pp. 596, 597 (in part.) [4].

Hab. North America, El Paso, Texas, Las Cruces, New Mexico, and S.W. Arizona (*coll. L. Bruner*).—Mexico, Villa Lerdo, Durango (*Höge*: 2 nymphs).

This is the largest representative of the genus, and is very distinct from all the others in wing-structure, as is indicated by the table for the separation of the various species.

Subfam. *PYRGOMORPHINÆ* *.

The subfamily Pyrgomorphinæ is represented in Central America, Mexico, and the adjacent portions of the United States by no less than six well-marked genera and about twenty species. Most of the forms belong to *Calamacris*, Rehn, and *Sphenarium*, Charp. The members of the former genus are restricted to the more arid regions of Middle and Northern Mexico and Arizona, while those of the latter are distributed throughout the humid portions of Mexico southward. The genera may be recognized by aid of the annexed Table †:—

Synopsis of the Genera.

A. Apical spine on the outer side of the hind tibiæ wanting. Posterior lobe of the pronotum not decidedly shorter than the anterior one. Tegmina and wings well developed, in the male equal to, in the female shorter than, the abdomen	Pyrgomorpha, Serville.
AA. Apical spine on the outer side of the hind tibiæ strongly conspicuous. Posterior lobe of the pronotum decidedly shorter than the anterior one. Tegmina and wings wanting or the former only present and rudimentary.	
b. Body elongate, slender, subcylindrical. Tegmina wanting or very rudimentary.	
c. Antennæ filiform, cylindrical, inserted between the eyes. General colour green or greenish	Ichthydion, Saussure.
cc. Antennæ ensiform or subensiform, the joints depressed, inserted at the upper extremity of, or slightly beyond,	

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* Principal works referred to for this subfamily are:—
Bolivar, Ignacio, Monografia de los Pirgomorfinos (Madrid, 1884).
Bolivar, Ignacio, "Notas sobre los Pirgomorfidos" (Bol. Soc. Esp. Hist. Nat. 1904, pp. 306–326).
Karsch, F., "Beiträge zu Ignacio Bolivar's Monografio de los Pirgomorfinos" (Ent. Nachr. xiv. 1888).

† The insect figured on Tab. IV. figg. 27, 27 *a*, as *Aspidophyma americana* has since been described and figured by Rehn as *Microtylopteryx fusiformis* (see Proc. Acad. Nat. Sci. Philad. 1905, pp. 451–454, fig. 43) and assigned a place among the genera of the subfamily Acridiinæ. See *infra*.

the eyes. General colour testaceous, cinereous, dark olivaceous, or even ferruginous . . . . . CALAMACRIS, Rehn *.

bb. Body robust or even obese, frequently compressed. Tegmina, when present, elongate.

c. Pronotum acutely tectiform. Antennæ triquetrous, dilated at the base. Tegmina and wings wanting. Cerci of male branched . . . . . XYRONOTUS, Saussure.

cc. Pronotum obtusely tectiform or rounded. Antennæ filiform. Cerci of male simple.

d. Tegmina ampliated at the apex. Pronotum gently sinuate behind . . . . . SPHENARIUM, Charpentier.

dd. Tegmina ampliated at the base. Pronotum strongly sinuose behind . . . . . PROSPHENA, Bolivar.

CALAMACRIS, Rehn.

Calamacris, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 529.
Atyphoscirtus, Bruner (MSS.).

This genus of locusts is confined to the warmer parts of the arid regions of North America. Representatives occur from Southern Arizona in the United States to the State of Jalisco in Mexico. Five forms are represented either by specimens at hand or by published descriptions. They may be separated briefly as follows:—

Table for separating the Species of Calamacris.

A. Body without definite, or with very faint, supplemental longitudinal carinæ on the dorsum of the meso- and metathoracic and basal abdominal segments.

b. Tegmina present, very small and simple. Fastigium of the vertex rounded. (Jalisco.) . . . . . 1. *clendoni*, Rehn.

bb. Tegmina wanting. Fastigium of the vertex acuminate. (Lower California.) . . . . . [2. *californica*, sp. n.]

AA. Body provided with conspicuous supplemental longitudinal carinæ on the dorsum of the meso- and metathoracic and basal abdominal segments.

b. Antennæ exceptionally heavy, widely dilated at the base. Face very strongly oblique. (Lower California.) . . . . . [3. *mexicana*, sp. n.]

bb. Antennæ rather slender, only gently dilated at the base. Face less strongly oblique.

c. Eyes moderate, not prominent. The fastigium of the vertex rounded. (Lower California.) . . . . . [4. *palmeri*, sp. n.]

cc. Eyes large and very prominent. The fastigium of the vertex acuminate, slightly depressed. (Southern Arizona and probably N. Mexico.) . . . . . 5. *oculata*, sp. n.

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* This genus is the same as *Atyphoscirtus*, two species of which are figured on Tab. IV. figg. 24, 25, 26.

1. **Calamacris clendoni,** Rehn.

Calamacris clendoni, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 529[1].

Hab. Mexico, Guadalajara in Jalisco[1].

This insect is not represented in the collections at hand. It is just possible that the sexes as described by Mr. Rehn belong to distinct species, since the discrepancy in size between the two is greater than between the smallest male and largest female of all the material before me. His statement that the female has a "form much as in the male but slenderer" does not agree with any of the other species here described.

[2. **Calamacris californica,** sp. n. (*Atyphoscirtus californicus,* Tab. IV. figg. 24, ♀; 25, 25 *a*, ♂.)

General colour brownish-testaceous, with a tinge of olive about the head and thorax above. The male is marked with a pale line on each side of the head, along the lower edge of the pronotum, and across the sides of the meso- and metathorax to the base of the hind femora. The inner side of the middle femora of the male and the knees of the hind pair in both sexes are black or fuscous.

The fastigium of the vertex is shorter and very much narrower than in *C. mexicana,* with its apex acuminate even in the female. Surface of the body somewhat rugose in the female and more or less transversely wrinkled, in the male much smoother and punctate.

Length of body, ♂ 21, ♀ 30; of antennæ, ♂ 9·5, ♀ 8·5; of pronotum, ♂ 3·5, ♀ 4·8; of hind femora, ♂ 9·5, ♀ 10·5 millim.

Hab. Lower California, San José del Cabo (*coll. Calif. Acad. Sci.*).]

[3. **Calamacris mexicana,** sp. n. (*Atyphoscirtus mexicanus,* Tab. IV. fig. 26, ♀.)

General colour dark grey-brown, with the venter and the inner face of the hind femora flavous. Antennæ triquetrous, heavy and unusually broad at the base, shorter than the head and pronotum taken together; inserted considerably in advance of the eyes. Head of about the same length as the pronotum; the fastigium somewhat longer than one of the eyes, its sides a little convergent anteriorly, the front edge rounded; eyes striped longitudinally with brown, only moderately prominent, one-half longer than broad, their hind edge truncate, separated above by a space nearly equal to their shortest diameter; occiput rugose and canaliculate. Pronotum subcylindrical, punctate, rugose and coarsely, longitudinally carinate; the hind lobe very short and lacking the longitudinal carinæ, its posterior edge nearly straight, very gently emarginate in the middle. Meso- and metathorax, as well as the abdominal segments above, provided with several longitudinal ridges, which give to the insect a corrugated appearance. Tegmina very rudimentary and narrow, reaching only to the hind margin of the mesothoracic segment. Abdomen rather long and cylindrical; the valves of the ovipositor slightly crenulate on the outer edges and furnished with a series of small tubercles on their disc above. Hind femora small, slender, their apices falling considerably short of the tip of the abdomen. Hind tibiæ with 10 or 11 spines in the outer row. The anterior edge of the prosternum with a somewhat elevated transverse ridge.

Length of body, ♀, 30; of head 4·6, of pronotum 4·15, of tegmina 1·5, of hind femora 10, of antennæ 7 millim.

Hab. Lower California, Patrocinio (*Chas. D. Haines, coll. Calif. Acad. Sci.*).

A single specimen.]

[4. **Calamacris palmeri,** sp. n.

Very similar to *C. mexicana* in general structure and size, but differing from that insect, as indicated by the synoptic table of the species, in the less heavy antennæ and the more acuminate fastigium of the vertex.

Length of body, ♀, 34; of antennæ 8·5, of pronotum 5, of hind femora 11 millim.

Hab. Lower California, Cape St. Lucas (*Dr. Palmer, in coll. S. H. Scudder*).]

5. **Calamacris oculata,** sp. n.

The single specimen at hand has been preserved in spirits and has lost its colour. The lower edges of the pronotum, however, show traces of a pale line, the inner side of the middle femora and the basal half of the tibiæ are black, while the hind tibiæ have the lower side and apical third strongly infuscated. The inner side of the knees is also darkened.

The distinctive characters are noted in the synoptic table of the species.

Length of body, ♂, 22; of antennæ 9·5, of pronotum 3, of hind femora 9 millim.

Hab. North America, extreme Southern Arizona (*coll. Calif. Acad. Sci.*).

It certainly occurs across the border-line in Mexico as well.

PYRGOMORPHA, Serville.

Truxalis, Charpentier, Horæ Ent. p. 126 (1825); Burmeister, Handb. Ent. ii. p. 206 (1838).

Truxalis (*Pyrgomorpha*), Serville, Hist. Orthopt. p. 583 (1839).

Pyrgomorpha, Brunner, Prodr. Eur. Orthopt. p. 185 (1882); Bolivar, Monogr. Pirgomorfinos, p. 76 (1884).

1. **Pyrgomorpha dispar,** Boliv.

Pyrgomorpha dispar, Boliv. Monogr. Pirgomorfinos, p. 79 (1884) [1].

Hab. Mexico (*coll. Brunner v. Wattenwyl* [1]).

This insect is not represented in any of the collections studied, and is the only species of the genus thus far reported from American territory.

ICHTHYDION, Saussure.

Ichthydion, Saussure, Rev. et Mag. Zool. (2) xi. p. 390 (1859); Bolivar, Monogr. Pirgomorfinos, p. 94, t. 2. fig. 13 (1884).

1. **Ichthydion mexicanum,** Sauss. (Tab. IV. figg. 22, 22 *a*, ♀.)

Ichthydion mexicanum, Sauss. Rev. et Mag. Zool. (2) xi. p. 390 [1]; Thom. Acrid. N. Amer. p. 198 (1873) [2]; Boliv. Monogr. Pirgomorfinos, p. 94, t. 2. figg. 13, 13 *a* (1884) [3].

Hab. Mexico [1], Vera Cruz (*coll. L. Bruner* [3]).

XYRONOTUS, Saussure.

Xyronotus, Saussure, in litt.; Bolivar, Monogr. Pirgomorfinos, p. 96, t. 2. fig. 12 (1884).

This genus is confined to Mexican territory, and thus far is known only by a single

species. Its general colour and appearance would indicate a life among dead leaves. The insect is probably a denizen of the jungles of the warmer parts of the country.

1. **Xyronotus aztecus,** Sauss. (Tab. IV. figg. 23, 23 *a*, ♂.)

Xyronotus aztecus, Sauss. in litt.[1]; Boliv. Monogr. Pirgomorfinos, p. 96, t. 2. figg. 12, 12 *a–c* (1884)[2]; Karsch, Ent. Nachr. xiv. p. 343 (1888)[3].

Hab. Mexico [1–3], Orizaba (*coll. L. Bruner*).

A single specimen, a male, is at hand. It is in the present writer's collection, and bears the label "Mexico, Apr."

SPHENARIUM, Charpentier.

Sphenarium, Charpentier, Orthopt. descript. et depict. t. 31 (1841–1845).

The genus *Sphenarium* is composed of about a dozen closely related species, or forms, of wingless locusts that are distributed over portions of Middle and Southern Mexico. Some of them enjoy a rather wide range, while others are much more restricted in their distribution. The following synoptical table will show the relationships of the forms which are here recognized:—

Table for separating the Species of Sphenarium.

A. Tegmina with their edges parallel or nearly so, very little or not at all broadening toward their apices. Pronotum cylindrical, its median carina usually but poorly defined in the males, a little more prominent in the females.	
b. Cheeks back of the eyes smooth. Knees of hind femora fusco-castaneous.	
c. Size large (♂, length 33 mm.). Body smooth, more or less glabrous; pronotum punctate	1. *histrio,* Gerst.
cc. Size smaller (♂, length 25–28 mm.). Body dull, rugose; pronotum somewhat transversely wrinkled.	
d. Lateral edges of the pronotum of female pale. The male without a conspicuous pale dorsal stripe	2. *carinatum,* Boliv.
dd. Lateral edges of the pronotum in the female concolorous. The males provided with a very conspicuous pale dorsal stripe which reaches from the front edge of the pronotum to the tip of the abdomen	3. *bolivari,* sp. n.
bb. Cheeks back of the eyes tuberculate. Knees of the hind femora usually concolorous.	
c. More robust. General colour green. Lower lateral edges of female pronotum and tegmina concolorous. Male with reddish mesonotum, lateral pronotal and abdominal bands, and tegmina	4. *mexicanum,* Sauss.

cc. Slenderer, general colour fusco-olivaceous. Lower lateral edges of female pronotum pale, and with the tegmina brunneous or fuscous. Male not provided with reddish markings . . . 5. *marginatum,* sp. n.

AA. Tegmina plainly broadening apically. Pronotum tectiform, the median carina usually rather conspicuous and percurrent.

b. Fastigium of the vertex plainly longer than one of the eyes, even in the female. Mesonotum black. (Tepic and Guanajuato.) . 6. *borrei,* Boliv.

bb. Fastigium of the vertex little, if any, longer than one of the eyes, in the female usually shorter. Mesonotum varied with yellow.

c. Anterior and middle femora of male very robust.

d. Body dull wood-brown in both sexes, the surface evenly rugose. Pronotum without definite lateral carinæ . . . 7. *rugosum,* sp. n.

dd. Body of male at least more or less glabrous. General colour variable. Lateral carinæ of the pronotum more or less prominent.

e. Larger (♂, length 26 mm.). Pronotal carinæ complete, glabrous. Colour fusco-piceous varied with yellow. Fastigium of the vertex with its sides but little convergent anteriorly. Body robust, ♂ . . . . . 8. *barretti,* sp. n.

ee. Smaller (♂, length 20–22 mm.). Lateral carinæ of the pronotum interrupted or obscure. Fastigium of the vertex with its sides rather strongly convergent. Body of male more slender . . . . . 9. *purpurascens,* Charp.

cc. Anterior and middle femora of males but little enlarged.

d. Median carina of the pronotum weak. Fastigium short, the sides rather strongly convergent . . . . . 10. *planum,* sp. n.

dd. Median carina of the pronotum fairly conspicuous. The fastigium with its sides nearly parallel . . . . . 11. *minimum,* sp. n.

1. **Sphenarium histrio,** Gerst.

Sphenarium histrio, Gerst. Stett. ent. Zeit. 1873, p. 196[1] (nec Bolivar).

Hab. MEXICO[1], Colon [Aspinwall], Barrios or Isthmus of Tehuantepec (*coll. S. H. Scudder*).

A single discoloured female specimen from Tehuantepec is referred here. It is larger than any other *Sphenarium* before me, and measures the same as Gerstaecker's male (length 33 millim.).

2. **Sphenarium carinatum,** Boliv.

Sphenarium carinatum, Boliv. Bol. Soc. Esp. Hist. Nat. 1904, pp. 306, 307[1].

Hab. GUATEMALA, Testuaco, Santa Rosa[1] (*coll. U.S. Nat. Mus.*).

A male and female in the United States National Museum seem to belong here, as they agree with Bolivar's description and come from the type locality.

3. **Sphenarium bolivari,** sp. n.

? *Sphenarium histrio,* Boliv. Monogr. Pirgomorfinos, p. 98, figg. 14, 14 *a* (1884) [1].

Similar in size and general form to *S. mexicanum*, but lacking the tuberculations on the sides of the head behind the eyes. In its coloration the present species, in the male at least, is much more varied than is that sex of *S. mexicanum*; but the striking difference is the conspicuous yellow medio-dorsal line which extends without interruption from the front edge of the pronotum to the base or even middle of the supra-anal plate. The general colour of the pronotum is fusco-olivaceous, save for the pale lower edges, the dorsal line, and two or three short wedges of yellow on the back edge of dorsum between the humeral angle and median carina. The mesonotum is red, as are also the lateral abdominal bands and a dash just above the tegmina on the metathoracic ring. A tinge of the same colour is also found on the sides of the pronotum just over the piceous line which borders the pale yellow lateral borders. The basal abdominal segment above is provided internally with a rather prominent quadrate patch of yellow. The pleura and venter, along with the face, are also pale yellow. The knees of the hind femora and the base of the intermediate tibiæ are infuscated, while the tibiæ are greenish and without a trace of red or coral.

Length of body, ♂, 26–28; of pronotum 6·5, of hind femora 14·5 millim.

Hab. Mexico [1], Salina Cruz, Oaxaca (*C. C. Deam, coll. L. Bruner*).

The female of this form is not definitely known. The two males found by Mr. Deam are a little more robust and have a heavier median carina of the pronotum and the fastigium of the vertex shorter and broader than in *S. mexicanum*. A male and female are at hand from Cuernavaca, which appear to be intermediate between *S. bolivari* and *S. mexicanum*. Bolivar's description of *S. histrio* is probably based on specimens of the present form.

4. **Sphenarium mexicanum,** Sauss.

Sphenarium mexicanum, Sauss. Rev. et Mag. de Zool. (2) xi. p. 390 (1859) [1]; Bolıv. Monogr. Pirgomorfinos, pp. 98, 99 (1884) [2].

? *Sphenarium ictericum,* Gerst. Stett. ent. Zeit. 1873, p. 196 [3].

Hab. Mexico [1–3], Orizaba (*H. H. Smith & F. D. Godman; coll. Bruner*), Cordova, Medellin, &c. (*coll. L. Bruner*), Tehuantepec (*coll. Scudder* [3]).

This appears to be the commonest and most widely distributed species of the genus. It ranges from the sea-level to nearly or quite 4000 feet above, but is confined to the humid portions lying to the eastward and southward of the great volcano of Orizaba. Its size is quite variable, as is also its coloration.

5. **Sphenarium marginatum,** sp. n.

This species is comparable with *S. mexicanum*, from which it differs, as shown in the synoptic table, by its more slender form and the pale-edged pronotum in the female. It differs further in being generally much duller coloured, in lacking the red or purple dorsal and abdominal bands of *S. mexicanum*, and in its somewhat longer fastigium of the vertex.

Length of body, ♂ 22, ♀ 26; of pronotum 5·5; of hind femora, ♂ 13·5, ♀ 12·5 millim.

Hab. Mexico, Cordova (*Höge*: ♂ ♀), Orizaba, Medellin (*coll. L. Bruner*: ♂ ♀).

A male and female *in coitu* were found by Herr Höge. The types bear Saussure's label "*Sphenarium mexicanum*," but this is certainly an error.

6. **Sphenarium borrei,** Boliv. (Tab. IV. fig. 21, ♂.)

Sphenarium borrei, Boliv. Mongr. Pirgomorfinos, p. 99 (1884)[1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 528[2].

Hab. Mexico[2], Guanajuato (*Mus. Belg.*[1]), Guadalajara and Tepic in Jalisco (*coll. Acad. Nat. Sci.*).

This is probably the most northerly distributed species of the genus.

7. **Sphenarium rugosum,** sp. n.

Above the medium in size, rather robust, with heavy legs and coarsely and evenly granulose body. General colour dull wood-brown, modified only by a narrow pale line behind each eye, a medio-dorsal one on the mesonotum, and a very narrow pale border to the sides of the pronotum. Lower side of pectus and venter pale. Fastigium rather short and obtuse. Tegmina spatulate, reaching the hind extremity of the metathorax. Pronotum with slight, but interrupted, lateral carinæ.

Length of body, ♂ ♀, 28; of pronotum 7, of hind femora 15 millim.

Hab. Mexico, Cuernavaca in Morelos (*C. C. Deam, in coll. L. Bruner*: ♂ ♀).

On account of its dull granulose surface, this insect does not resemble very closely any of the other species of the genus. Its body is also sparsely covered with rather long grey hairs. Found in the month of January at Cuernavaca.

8. **Sphenarium barretti,** sp. n.

In size and form very similar to the preceding species, but with well-marked lateral carinæ on the pronotum, and with the body more or less glabrous, though granulose as well. General colour fusco-piceous varied with yellow. Face, a line on each side of the head back of the eyes, the lower edge of the sides of the pronotum rather broadly, the lateral and median carinæ, a medio-dorsal line on the meso- and metathorax and abdomen, and an oblique line on each side of the mesonotum, yellow. There is also a conspicuous yellow maculation on each side of the basal abdominal segment, while the dark lateral abdominal stripes are rather widely margined, both above and below, with paler colour, thereby giving the abdomen the appearance of being longitudinally vittate with light and dark. Hind femora with dark knees; the tibiæ rather strongly infuscated.

Length of body, ♂, 27; of pronotum 5·5, of hind femora 15·3 millim.

Hab. Mexico, Rio Cocula, Guerrero (*O. W. Barrett, in coll. L. Bruner*: ♂).

A single specimen, found in December. This form seems to be rather closely related to *S. purpurascens,* Charp., but most certainly differs from that insect as recognized by the present writer.

9. **Sphenarium purpurascens,** Charp.

Sphenarium purpurascens, Charp. Orthopt. descr. et depict. t. 31. figg. 1–8 (1841–45)[1]; Boliv. Monogr. Pirgomorfinos, p. 100, t. 2. fig. 15 (1884)[2].

Hab. Mexico[1 2], Tlalpam, Distrito Federal, Puebla, &c. (*coll. L. Bruner*).

The insect here taken to be *S. purpurascens* of Charpentier is confined to the more elevated tablelands in the vicinity of Mexico City. It is an exceedingly common and variable locust as represented in the present writer's collection. Charpentier's types were evidently discoloured by immersion in alcohol, and his figures do not give the natural colours of the insect. The prevailing colour of the specimens at hand ranges from olive-green to brownish-piceous varied with yellow in the male, and grass-green to dull wood-brown in the female.

Rehn refers certain specimens which he has studied to this species (Trans. Amer. Ent. Soc. xxviii. p. 227, and xxix. pp. 11, 12). Judging from their habitat, only part of them could be referable to *S. purpurascens*, while the others, for the most part, evidently belong to *S. mexicanum*, Sauss. The same might be said of *S. borrei* ?, Rehn (*loc. cit.* xxvii. p. 227).

10. **Sphenarium planum,** sp. n.

Below the medium in size, green or greenish, with fuscous or black mesonotum, which is nearly (♂) or quite (♀) hidden by the rather ample pronotum. The latter evenly rounded, without lateral carinæ or angles, strongly expanding and more than usually undulate or sinuous behind; the surface rugose; the median carina distinct but faint; the lower lateral edges in male narrowly pale-bordered. Head rather stout, the vertex broad; the fastigium short, in the male obtuse, in the female angulate. Tegmina somewhat expanding apically; in the female green, in the male ferruginous. Hind femora moderately robust.

Length of body, ♂ 17, ♀ 22; of pronotum, ♂ 3·85, ♀ 5; of hind femora, ♂ 10, ♀ (?); of antennæ, ♂ ♀, 6 millim.

Hab. Mexico, Tehuantepec (*coll. L. Bruner*: ♂ ♀).

Two specimens. This insect seems to be related to *S. purpurascens*, but differs materially from that species in its more rotund form and in the absence of all traces of lateral carinæ on the pronotum. The female lacks the hind legs.

11. **Sphenarium minimum,** sp. n.

This insect is characterized by its small size, uniform green colour, and in the presence of fairly well-defined lateral pronotal carinæ. The body is sparsely hirsute and the legs are rather strongly so. The face viewed laterally is straight.

Length of body, ♂, 14; of pronotum 3·5, of hind femora 9, of antennæ 7·5 millim.

Hab. Mexico, Jalapa, Vera Cruz (*O. W. Barrett, in coll. L. Bruner*: ♂).

This diminutive specimen is fully mature. In general appearance it is quite different from both *S. purpurascens* and *S. planum*. Its habitat is likewise so radically different from that of the species named that it is separated from them without hesitation.

A male and female at hand from Orizaba are closely related to this last-named insect, but owing to the form of the vertex, which is long and has its sides convergent anteriorly, and the face arcuate when viewed laterally, have been temporarily labelled *Sphenarium affine*. The male is in the collection of the United States National Museum, and the female in that of L. Bruner.

PROSPHENA, Bolivar.

Prosphena, Bolivar, An. Soc. Esp. Hist. Nat. xiii. p. 447 (1884).

The only known representative of this genus, so far as at present known, is confined to Central America, where it is apparently rare.

1. **Prosphena scudderi**, Boliv.

Prosphena scudderi, Boliv. Monogr. Pirgomorfinos, p. 100 (1884)[1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 404[2].

Hab. GUATEMALA (*coll. Scudder*[1]; *Rev. Theo. Heyde & B. Shimek, in coll. L. Bruner*); COSTA RICA, Tarbaca (*Underwood*[2]).

The discovery of this insect in Costa Rica greatly extends its distribution.

Subfam. *ACRIDIINÆ**.

The present is by far the most extensive subfamily of locusts belonging to the Mexican and Central-American fauna. It likewise seems to be the most difficult one to handle from the standpoint of the systematist. The various forms differ widely one from another in size, modifications of structure, and habits. Some of them frequent grassy hill-slopes, glades, meadows, weed-patches, thorny thickets, &c.; a few live among aquatic plants at the margins of ponds and streams or in swamps, while others are at home only among the dead and decaying leaves in the gloomy forests. Several species live among the verdure of the tall trees high above the ground, and seldom visit *terra firma*, even for oviposition.

While the majority of known forms are fully winged and often capable of prolonged flight, a large percentage are entirely without these organs or possess them in a very rudimentary state of development. In their general appearance many of these locusts are very similar, but may readily be separated one from the other by certain permanent modifications of structure, size, and colour. For the purposes of identification we must consider structure of sexual appendages, pronotal characteristics, robustness of femora, comparative number of tibial spines, length of hind tarsal joints, structure and width of vertex, size and form of eyes, length and form of antennæ, form and size of prosternal

* Principal works referred to for this subfamily are:—

STÅL, C., Recensio Orthopterorum, No. 1, 1873, pp. 26–87.
STÅL, C., Systema Acridiodeorum, 1878, pp. 100.
STÅL, C., Observations Orthoptérologiques, No. 3, 1878, pp. 20.
THOMAS, C., Synopsis of the Acrididæ of N. America, 1873.
WALKER, FRANCIS, Catalogue of the Dermaptera Saltatoria in the British Museum, 1871–1873.
BRUNNER v. WATTENWYL, C., Révision du Système des Orthoptères, 1893.
SCUDDER, S. H., Revision of the Melanopli, 1897.
GIGLIO-TOS, E., Viaggio del Dr. Enrico Fiesta nella Reppublica dell' Ecuador: Ortotteri, 1898.

spine, shape and distance apart of the meso- and metasternal lobes, and, lastly, colour of body, tegmina, wings, antennæ, and hind tibiæ.

Their distribution as a group is general, though a large number of the species which have thus far been recognized are restricted to limited areas. In conclusion, it is but just to add that probably very many undescribed forms still remain to be added to those here recorded.

The genera may be recognized by the subjoined table :—

Synopsis of the Genera.

1 (58). Posterior tibiæ provided above with apical spines on both margins.

2 (21). Fastigium of the vertex strongly produced horizontally.

3 (8). Frontal costa, viewed laterally, strongly produced between the antennæ, compressed, below the antennæ abruptly lowered. Pronotum in front truncate or emarginate.

4 (7). Pronotum elevated into a crest, or at least provided with a distinct median carina. Posterior femora with the upper carina serrate or denticulate. The spines on the inner side of the posterior tibiæ much longer than those on the outer side.

5 (6). Tegmina with their apices truncate, extending a little beyond the tip of the abdomen. Posterior femora rather short . . . . . PROCOLPIA, Stål.

6 (5). Tegmina with their apices narrowly rounded, reaching far beyond the tip of the abdomen. Posterior femora long . . . . . MUNATIA, Stål.

7 (4). Pronotum with its median carina obsolete or wanting. Posterior tibiæ elevated at the base into two acute triangular folds. Tegmina truncate at the apex. Antennæ long . . . . . ÆOLACRIS, Scudder.

8 (3). Frontal costa produced between the antennæ, below the antennæ lower, not abruptly, viewed laterally oblique, but straight or sometimes feebly arcuate-emarginate. Pronotum in front angulately produced.

9 (10). Median crest of the pronotum serrate for its entire length. PRIONOLOPHA, Stål.

10 (9). Median crest of the pronotum entirely smooth, sometimes crenulate posteriorly, or intersected by the transverse sulci.

11 (18). Lateral carinæ of the pronotum converging in front.

12 (15). Carinæ of the frontal costa below the ocellus parallel or only gently divergent. Tegmina variable.

13 (14). Tegmina and wings complete, equalling or surpassing the abdomen in length; pronotum wholly cristate . . TROPINOTUS, Serville.

14 (13). Tegmina and wings abbreviate, shorter than the abdomen. Pronotum doubly cristate, the anterior portion trilobed . . . . . DRACOTETTIX, Bruner.

15 (12). Carinæ of the frontal costa decidedly divergent below the ocellus.

16 (17). Tegmina usually complete . . . . . COLPOLOPHA, Stål.

17 (16). Tegmina abbreviated, rudimentary . . . . . DRACONATA, Pictet et [Saussure.

18 (11). Lateral carinæ of the pronotum parallel or anteriorly divergent.

19 (20). Median carina of the pronotum very prominent and widely interrupted on the anterior lobe, straight on the posterior lobe; tegmina greatly abbreviated in both sexes; apex of the male abdomen blunt and upturned; the sexes very unequal in size . . . . . CIBOTOPTERYX, Rehn.

20 (19). Median carina of the pronotum less prominent and scarcely interrupted by the transverse sulci; tegmina generally complete in the male, more or less abbreviated in the female; apex of the male abdomen somewhat acuminate, not upturned; the sexes more nearly equal in size . . . . . ELÆOCHLORA, Stål.

21 (2). Fastigium of the vertex declivant or sloping.

22 (37). Wings with the part immediately back of the humeral area dilated basally and provided with a number of parallel cross-veins.

23 (30). Fastigium of the vertex subtriangulately acuminate. Frontal costa compressed.

24 (29). Pronotum cristate or carinate for its entire length, its anterior margin subtriangulately produced or advanced upon the occiput.

25 (28). Fastigium of the vertex subhorizontal.

26 (27). Frontal costa above the antennæ narrowed, not sulcate at its upper extremity. Pronotum obtusely carinate, the lateral carina not reaching its front margin. Dilated portion of wings very prominent . . . . . DICTYOPHORUS, Thunberg.

27 (26). Frontal costa above the antennæ not narrowed, and sulcate only to a limited degree. Pronotum more acutely carinate, the lateral carinæ reaching its front margin. Dilated portion of wings inconspicuous . . LITOSCIRTUS, Bruner.

28 (25). Fastigium of the vertex strongly declivant. Frontal costa above the antennæ both narrowed and sulcate. Pronotum distinctly cristate . . . . . TÆNIOPODA, Stål.

29 (24). Pronotum not at all cristate, but the median carina sometimes very distinct on the metazona, the anterior margin truncate or emarginate in the middle . . . . CHROMACRIS, Walker.

30 (23). Fastigium of the vertex obtuse. The frontal costa neither compressed nor sulcate. Median carina of the pronotum elevated into a crest cut into lobes by the sulci.

31 (36). Posterior tibiæ provided apically on both sides with a spine.

32 (35). Interocular space of the vertex narrower than the length of the eyes.

33 (34). Tegmina densely reticulate, without intercalary veins between the branches of the radials . . . . . TITANACRIS, Scudder.

34 (33). Tegmina less densely reticulate, provided with intercalary veins between the branches of the radials . . . . . TROPIDACRIS, Scudder.

35 (32). Interocular space of the vertex as wide as, or wider than, the length of the eyes. Frontal costa very broad, above the antennæ dilated, not sulcate . . . . . PRIONACRIS, Stål.

36 (31). Posterior tibiæ without apical spine on the outer margin. NICHELIUS, Bolivar*.

37 (22). Wings with the part immediately back of the humeral area not dilated or furnished with parallel transverse veins. Fastigium of the vertex produced, angulately contiguous with the front.

38 (57). Mesosternal lobes distant.

39 (56). Frontal costa below the ocellus wanting or evanescent. Second joint of the hind tarsi elongate.

40 (55). Pronotum with the metazona shorter than the prozona.

41 (46). Interocular space of the vertex very narrow, narrower than the frontal costa. Costal border of the tegmina widely membranous.

42 (43). Frontal costa between the antennæ strongly produced, as seen from the side rounded . . . . . NAUTIA, Stål.

43 (42). Frontal costa between the antennæ only gently or moderately produced.

44 (45). Face and pronotum densely, strongly punctate . . . . OPHTHALMOLAMPIS, Stål.

45 (44). Face and anterior lobe of the pronotum smooth or sparsely, faintly punctate . . . . . TÆNIOPHORA, Stål.

46 (41). Interocular space of the vertex wider, at least equal to the width of the frontal costa. Costal border of the tegmina, when present, reticulate or veined.

47 (48). Pronotum elevated posteriorly . . . . . MEZENTIA, Stål.

48 (47). Pronotum not elevated posteriorly.

49 (50). Interocular space of the vertex of equal width with, or slightly wider than, the frontal costa, the latter deeply sulcate . . . . . HISYCHIUS, Stål.

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* According to Bolivar ('Enumération des Orthoptères de l'île de Cuba,' p. 29) the representatives of the genus *Nichelius* do not have an apical spine on the exterior margin of the hind tibiæ, although by other characters it would be necessary to class it in the section provided with the spine.

50 (49). Interocular space much wider than the frontal costa, the latter not sulcate.

51 (54). Vertex very short and greatly depressed. Pronotum glabrous.

52 (53). Tegmina wanting . . . . . RHICNODERMA, Gerstaecker.

53 (52). Tegmina present, but rudimentary . . . . . DICÆARCHUS, Stål.

54 (51). Vertex produced into a heavy spike that exceeds the pronotum in length; the latter tuberculate. Tegmina and wings present . . . . . BACTROPHORA, Westwood.

55 (40). Pronotum with the metazona triangulately produced, as long as, or longer than, the prozona . . . . . TRYBLIOPHORUS, Serville.

56 (39). Frontal costa continued to the labrum. Tegmina lobiform. Second joint of hind tarsi not elongate. Posterior femora with smooth carinæ . . . . . JIVARUS, Giglio-Tos.

57 (38). Mesosternal lobes contiguous, at least in the male . . . PRORACHTHES, Gerstaecker.

58 (1). Posterior tibiæ provided above with an apical spine internally only, the external one wanting (except in *Abila* and *Aristia*).

59 (74). Posterior tibiæ expanded apically, the margin acute.

60 (65). Mesosternal lobes touching in a straight suture for the greater portion of their length. The tegmina acuminate.

61 (64). Fastigium of the vertex as long as, or longer than, the longest diameter of the eyes.

62 (63). Fastigium of the vertex broadly grooved longitudinally in the middle . . . . . LEPTYSMA, Stål.

63 (62). Fastigium of the vertex without a longitudinal groove . CYLINDROTETTIX, Bruner.

64 (61). Fastigium of the vertex shorter than the eyes . . . . ARNILIA, Stål.

65 (60). Mesosternal lobes more or less distant. Tegmina subacuminate or rounded at their tip.

66 (71). Posterior margin of the pronotum rounded. Tubercle of the prosternum conical, more or less acute.

67 (68). Body very graceful or slender. Front strongly oblique. Head much exserted, conical. Antennæ distinctly ensiform. Eyes rather elongate, viewed from above strongly convergent, meeting at an acute angle. Pronotum distinctly dilated posteriorly, the lower edge of sides straight, oblique. Tegmina somewhat dilated toward the apex . . . . . INUSIA, Giglio-Tos.

68 (67). Body heavier. The front less oblique. Head gently exserted, not conical. Antennæ filiform or subensiform. Eyes not at all, or but little, elongated, when viewed from above slightly convergent, forming an obtuse

angle. Pronotum not at all, or but little, dilated posteriorly; the lower edge of sides straight on the posterior half, emarginate on the anterior half. Tegmina narrowed towards the apex.

69 (70). Pronotum cylindrical, the dorsum straight, viewed laterally, the metazona not elevated. Frontal costa below the ocellus and the lateral carinæ of the face subobsolete. Eyes rather oblique, less prominent . . STENOPOLA, Stål.

70 (69). Pronotum gently dilated posteriorly, the dorsum when viewed laterally sinuate, subselliform, the metazona gently elevated, the humeral angles rather distinct. Eyes less oblique and strongly prominent . . . . . HENIA, Giglio-Tos.

71 (66). Posterior margin of the pronotum obtusangulate.

72 (73). Angle of the posterior margin of the pronotum entire, not incised. Tegmina greatly surpassing the hind femora. Frontal costa moderately prominent between the antennæ, subdilated. Eyes rather strongly convergent and somewhat remote from the front edge of the pronotum. Tegmina with their apices subacuminate . . . . . CORNOPS, Scudder.

73 (72). Angle of the posterior margin of the pronotum greatly incised. Tegmina not surpassing the hind femora. Frontal costa subobsolete below the ocellus, not sulcate; fastigium of the vertex declivant . . . . TETRATÆNIA, Stål.

74 (59). Posterior tibiæ not, or but little, expanded apically, the margins rounded.

75 (80). Hind tibiæ with three or four of the spines on apical portion of outer row decidedly larger than the others and separated from them by a greater space, the number usually six, but sometimes seven to ten.

76 (77). Fastigium of the vertex short. Prosternal spine broadly transverse and blunt. Outer tibial spines six in number, three basal, three apical . . . . . COPIOCERA, Burmeister.

77 (76). Fastigium of the vertex longer. Prosternal spine ampliated apically, the apex flattened and the margin acute. Outer tibial spines about ten, three apical.

78 (79). Antennæ arising considerably in advance of the eyes. Tegmina very long and pointed. Disc of wings black or fuliginous. Fastigium of the vertex long and mitriform, as long as the occiput . . . . . EPISCOPOTETTIX, Rehn.

79 (78). Antennæ arising only slightly in advance of the eyes. Tegmina lobiform, lateral. Fastigium of the vertex shorter than the occiput, its sides nearly parallel . . EUCOPIOCERA, Bruner.

80 (75). Hind tibiæ with the spines on the outer row regularly arranged, seven or more in number.

81 (92). Posterior tarsi with the first and second joints subequal in length.

82 (89). Valves of the ovipositor slender, straight, unarmed.

83 (88). Fastigium of the vertex horizontal or subhorizontal, prominent. Front rather strongly oblique.

84 (85). Front edge of the pronotum above sinuate, decidedly emarginate at the centre. Tegmina sometimes complete, sometimes abbreviate, but not lobiform. Male cerci long, coarse, and furnished near the middle below with a strong tooth or prong . . . . . PROCTOLABUS, Saussure.

85 (84). Front edge of the pronotum broadly rounded, entire or only faintly emarginate.

86 (87). Second joint of the hind tarsi longer than the first. Pronotum and tegmina banded with flavous, the latter as long as the abdomen . . . . . LEIOSCAPHEUS, Bruner.

87 (86). Second joint of the hind tarsi no longer than, or scarcely as long as, the first. Pronotum and tegmina unicolorous, the latter about one-half the length of the abdomen . . . . . ANNICERIS, Stål.

88 (83). Fastigium of the vertex more or less depressed, less prominent. Tegmina rudimentary or wanting. Posterior edge of the pronotum truncate. Insect glabrous, metallic . . . . . DELLIA, Stål.

89 (82). Valves of the ovipositor more robust, of normal form, the apex hooked.

90 (91). Tegmina complete, as long as, or a little longer than, the abdomen. Legs plain, not banded . . . . . COSCINEUTA, Stål.

91 (90). Tegmina somewhat abbreviated, considerably shorter than the abdomen. Legs conspicuously banded . . . . ZOSPERAMERUS, Bruner.

92 (81). Posterior tarsi with the second joint distinctly shorter than the first.

93 (123). Fastigium of the vertex triangular or in front truncate and separated from the frontal costa by a transverse carina or a distinct angle.

94 (101). Fastigium divided from the vertex by a more or less obvious transverse carina. Lateral carinæ of the face strongly divergent below. Head large, greatly exserted.

95 (98). Frontal costa plain between the antennæ, not sulcate.

96 (97). Posterior tibiæ armed externally with an apical spine. Tegmina and wings complete. Prosternal spine acute. Hind margin of pronotum angulate . . . . . ABILA, Stål.

97 (96). Posterior tibiæ externally without an apical spine. Body robust, apterous. Prosternal spine blunt, transverse. Hind margin of pronotum truncate . . . . . PSILOTETTIX, Bruner.

98 (95). Frontal costa plainly sulcate between the antennæ.

99 (100). External edge of the hind tibiæ apically spined . . . ARISTIA, Stål.

100 (99). External edge of the hind tibiæ apically not spined . . PHÆOPARIA, Stål.

101 (94). Fastigium not divided from the vertex. Lateral carinæ of the face not, or but little, divergent.

102 (105). Superior carina of the hind femora smooth.

103 (104). Tegmina and wings complete, extending considerably beyond the apex of the abdomen in both sexes. Head small, the eyes elongate. Hind lobe of the pronotum nearly or quite as long as the front one. Disc of the wings hyaline. Male cerci elongate, the apex slightly emarginate or forked . . . . . OMALOTETTIX, Bruner.

104 (103). Tegmina and wings incomplete, shorter than the abdomen in both sexes. Head rather large, the eyes subglobose, prominent. Hind lobe of the pronotum much shorter than the front one. Disc of the wings blue. Male cerci robust, emarginate nearly to the base, both forks conical . . . . . CHRYSOPSACRIS, Bruner.

105 (102). Superior carina of the hind femora more or less tuberculate or serrate.

106 (116). Fastigium of the vertex horizontally produced, rounded or acuminate.

107 (115). Posterior femora not or very slightly surpassing the apex of the abdomen. Fastigium of the vertex a little widened, the edges horizontally, laminately dilated. Pronotum rugose.

109 (110). Tegmina wanting. Pronotum posteriorly truncate, the middle a little elevated . . . . . CALETES, Redtenbacher.

110 (109). Tegmina present, though sometimes lateral and lobiform. Pronotum posteriorly emarginate, rounded, or angulate, the middle not elevated.

111 (112). Vertex in advance of the eyes deeply sulcate. Tegmina lobiform, lateral. Body provided with supplemental longitudinal carinæ. Pronotum posteriorly arcuate-emarginate. Antennæ narrowly ensiform . . . . CLEMATODES, Scudder.

112 (111). Vertex in advance of the eyes very gently or not at all sulcate. Body without supplemental carinæ. Tegmina fully developed or at least nearly half the length of the abdomen. Posterior edge of the pronotum rounded or angulate.

113 (114). Antennæ subensiform, the basal joints somewhat de-

pressed. Legs and body without green markings. Wings usually fully-developed . . . . . VILERNA, Stål.

114 (113). Antennæ linear, the basal joints not depressed. Legs and body marked with green. Tegmina and wings nearly or quite one-half the length of the abdomen . LEPTOMERINTHOPHORA, [Rehn.

115 (107). Posterior femora distinctly surpassing the apex of the abdomen. Tegmina complete, widened apically and obliquely truncate at the apex. General form that of *Abila* . . . . . SYLETRIA, Rehn.

116 (106). Fastigium of the vertex deflexed or subhorizontal, the apex slightly truncate.

117 (118). Tegmina abbreviate, but not lobiform. Pronotum furnished on the anterior lobe with two large, very high, acuminate lobes and armed on the lateral margins with four teeth . . . . . NICARCHUS, Stål.

118 (117). Tegmina lobiform or rudimentary, very small or missing.

119 (120). Upper carina of the hind femora distinctly serrate. The apical joint of the palpi usually depressed and dilated . . . . . OMMATOLAMPIS, Burmeister.

120 (119). Upper carina of the hind femora smooth. Apical joints of the palpi terete.

121 (122). Hind femora moderately slender, the lower margin before the knees straight. Insects small, graceful . SITALCES, Stål.

122 (121). Hind femora unusually robust, the lower margin broadly arcuate before the knees. Insects medium in size, robust . . . . . ŒDOMERUS, Bruner.

123 (93). Fastigium of the vertex deflexed or horizontal, sensibly merging into the frontal costa.

124 (125). Mesosternal lobes longer than wide, their inner edge straight . . . . . SCHISTOCERCA, Stål.

125 (124). Mesosternal lobes transverse or of equal length and width, the internal margin rounded.

126 (127). Posterior femora very graceful, the base but little incrassate. Posterior lobe of the pronotum elevated into a very high crest, much longer than the anterior lobe . . . . . MONACHIDIUM, Serville.

127 (126). Posterior femora with the base more or less decidedly incrassate. Posterior lobe of the pronotum variable in form, but never elevated into a crest.

128 (177). Posterior tibiæ armed on the external border usually with more, but never with fewer, than eight spines.

129 (162). Lateral margins of last ventral segment of the male abdomen, as viewed laterally, straight throughout or

very slightly convex, never abruptly ampliate at the base.

130 (141). Interspace between the mesosternal lobes of the female decidedly transverse, sometimes twice as broad as long; of the male occasionally transverse, frequently quadrate or subquadrate; tegmina lobiform, linear, or wanting.

131 (132). Interspace between the mesosternal lobes of male decidedly transverse, as broad as, or broader than, the lobes themselves; pronotum without lateral carinæ . . . . . NETROSOMA, Scudder.

132 (131). Interspace between the mesosternal lobes of male quadrate or subquadrate, or, if feebly transverse (*Paradichroplus*), not as broad as the lobes themselves, and then the pronotum is furnished with lateral carinæ; the tegmina ovate or linear.

133 (138). Last ventral segment of the male abdomen elongate, extending well beyond the apex of the supra-anal plate.

134 (135). Tegmina and wings usually complete, as long as or longer than the abdomen. Hind margin of the pronotum angulate or rounded; apex of the last ventral segment of the male abdomen without an apical tubercle . . . . . DICHROPLUS, Stål.

135 (134). Tegmina and wings abbreviate, lateral. Hind margin of the pronotum truncate; last ventral segment pyramidal, pointed, a slight tubercle extending beyond its posterior margin.

136 (137). Body comparatively slender; pronotum provided with lateral carinæ; metasternal lobes of the male nearly approximate; prosternal spine transverse. Tip of the male abdomen neither clavate nor upturned; furcula present . . . . . PARADICHROPLUS, Brunner.

137 (136). Body rather robust; pronotum rugose, without lateral carinæ; prosternal spine stout, cylindrical; metasternal lobes of the male about one-half as distant as the mesosternal lobes. Tip of the male abdomen clavate and upturned; furcula wanting . . . . . DASYSCIRTUS, Bruner.

138 (133). Last ventral segment of the male abdomen more or less conically protuberant apically, but its interior apical margin not or barely surpassing the apex of the supra-anal plate.

139 (140). Apical tubercle of the subgenital plate small, extending but a short distance beyond the supra-anal plate;

cerci of the male abruptly narrowed before the middle by the excision of the inferior margin, the apical half narrow; lateral carinæ of the pronotum wholly wanting . . . . . PHÆDROTETTIX, Scudder.

140 (139). Nearly the whole subgenital plate forming a blunt conical tubercle projecting some distance beyond the supra-anal plate; cerci of the male forming broad, apically decurved, subfalcate laminæ; lateral carinæ of the pronotum more or less distinct . . . . . CONALCÆA, Scudder.

141 (130). Interspace between the mesosternal lobes of the female generally longer than broad, sometimes quadrate, rarely feebly transverse; of the male never transverse (except feebly so in *Sinaloa* and *Cephalotettix*); the tegmina variable.

142 (159). Tegmina never fully developed, rarely as long as the pronotum, lateral and ovate, or linear, or wholly wanting; hind margin of pronotum distinctly truncate or even emarginate; fore and middle femora of male (except in *Phaulotettix*) distinctly more gibbous than in the female.

143 (152). Furcula of the male abdomen wanting or forming a pair of short lobes, at most no longer than broad.

144 (147). Last dorsal segment of the male abdomen furnished mesially with a pair of slightly protuberant rounded lobes; cerci of the male compressed, laminate, beyond the slightly narrowing basal portion equal or subequal, the tip curved downward or inferiorly angulate at the apex.

145 (146). Prosternal spine erect; interspace between the mesosternal lobes nearly twice as long as broad; fore and middle femora of the male noticeably gibbous; subgenital plate of the male terminating in a large conical tubercle . . . . . BARYTETTIX, Scudder.

146 (145). Prosternal spine retrorse; interspace between the mesosternal lobes of the male only a little longer than broad; fore and middle femora of the male only slightly gibbous; subgenital plate of the male without apical tubercle . . . . . PHAULOTETTIX, Scudder.

147 (144). Last dorsal segment of the male abdomen without projecting lobes or furcula in any form, unless as exceptionally broad and short sessile plates; cerci of the male (except in *Cephalotettix*) apically acuminate or curved upward.

148 (149). Head large, and eyes (at least in the male) large and very prominent, the breadth of the head distinctly exceeding the greatest width of the pronotum; interspace between the mesosternal lobes of the male slightly transverse . . . . . CEPHALOTETTIX, Scudder.

149 (148). Head normal and the eyes not very prominent even in the male, so that the breadth of the head does not exceed the greatest width of the pronotum; interspace between the mesosternal lobes of the male distinctly longer than broad.

150 (151). Tegmina lobiform; last ventral segment of the male abdomen protruding beyond the tip of the supra-anal plate by less than one-half the length of the latter; cerci of the male compressed, subequal, the tip broad . RHABDOTETTIX, Scudder.

151 (150). Tegmina linear; last ventral segment of the male abdomen protruding beyond the tip of the supra-anal plate by much more than one-half the length of the latter; cerci of the male tapering from the base, the tip acuminate . . . . . CYCLOCERCUS, Scudder.

152 (143). Furcula of the male consisting of a pair of parallel, attingent, cylindrical prominences, generally twice as long as broad.

153 (158). Tegmina lobiform.

154 (155). Interspace between the mesosternal lobes of the male slightly transverse. Cerci of the male forming compressed, subequal, laminæ . . . . . SINALOA, Scudder.

155 (154). Interspace between the mesosternal lobes of male decidedly elongate. Cerci of the male flattened. Abdomen above varied with >-shaped pale markings. Carinæ of the outer face of the hind femora alternately pale and darker.

156 (157). General colour of the insect green or greenish, varied with yellow. Lower carina of outer face of the hind femora dashed with yellow. Cerci of the male flattened, the posterior edge of the apical fourth obliquely docked . . . . . CALOTETTIX, Bruner.

157 (156). General colour of the insect brownish testaceous, varied with dark brown or black. Lower carina of the outer face of the hind femora testaceous and dashed with black . . . . . AGRŒCOTETTIX, Bruner.

158 (153). Tegmina wanting; interspace between the mesosternal lobes of the male longer than broad; cerci of the male styliform, conical . . . . . PARAIDEMONA, Brunner.

159 (142). Tegmina fully developed or abbreviate, never much, if any, shorter than the pronotum; hind margin of the pronotum distinctly angulate; fore and middle femora scarcely more gibbous in the male than in the female (except in some species of *Campylacantha*).

160 (161). Tegmina fully developed, disk of the pronotum almost flat, the lateral lobes nearly at right angles to it, the posterior margin rectangulate or subrectangulate; prosternal spine quadrate, appressed, broadly truncate. AIDEMONA, Brunner.

161 (160). Tegmina abbreviated; disk of the pronotum tectiform, the posterior margin obtusangulate; prosternal spine more or less conical and acuminate. Furcula of male reduced to slight, scarcely projecting lobes; surface of body rather densely pilose; prosternal spine more or less retrorse . . . . . CAMPYLACANTHA, Scudder.

162 (129). Lateral margins of the last ventral segment of the male abdomen suddenly ampliate to a considerable degree at the base; or if not to a considerable degree, then the entire margin is rather strongly convex or sinuate.

163 (166). Last ventral segment of the male abdomen furnished with a distinct subapical tubercle, but not otherwise tumescent.

164 (165). Body relatively slender and compressed, not much elongated at the metathorax, particularly in the male; hind femora long and slender; the apical tubercle of the male abdomen prominent; prevailing colour of insect green . . . . . HESPEROTETTIX, Scudder.

165 (164). Body relatively short and stout, considerably enlarged at the metathorax, even in the male; hind femora relatively short and robust; the apical tubercle of male abdomen not prominent; prevailing colours of insect testaceous and olive . . . . . ÆOLOPLUS, Scudder.

166 (163). Last ventral segment of the male abdomen without a distinct subapical tubercle, but often apically prolonged or tumescent.

167 (176). Tegmina always present; sides of the first abdominal segment furnished with a distinct tympanum.

168 (173). Inferior genicular lobe of the hind femora with at least a darker basal spot or transverse band; cerci of the male variable, often enlarging apically.

169 (172). Dorsum of the pronotum rarely or never twice as long as the average breadth, generally only half as long again, even in the male, usually constricted more or

less in the middle; antennæ, even when longest, no longer than the hind femora.

170 (171). Head not large in proportion to the pronotum, nor prominent, but little longer than the prozona, unless the latter is distinctly transverse; pronotum in no way subsellate, nor produced in front; tegmina, when fully developed, narrow; cerci of the male very variable in shape . . . . . MELANOPLUS, Stål.

171 (170). Head large in proportion to the pronotum, especially above, and prominent, nearly half as long again as the long prozona; pronotum faintly subsellate, feebly produced in front to receive the head; tegmina, when fully developed, broad and subequal, hardly tapering in the distal half; cerci of the male styliform, the last ventral segment very narrow, the margin not apically elevated . . . . . PHŒTALIOTES, Scudder.

172 (169). Dorsum of the pronotum twice as long as its average breadth, at least in the male, with no median constriction; antennæ, at least in the male, generally longer than the hind femora and much more than twice as long as the pronotum, generally twice as long as the head and pronotum together; prozona only about one-third longer than the metazona . . PAROXYA, Scudder.

173 (168). Inferior genicular lobe of the hind femora wholly pallid, with no dark basal spot or transverse band; cerci of male conical, subconical, or basally bullate, always apically pointed.

174 (175). Last ventral segment of the male abdomen terminating in a pronounced tubercle; prosternal spine slender; tegmina and wings complete . . . . . PŒCILOTETTIX, Scudder.

175 (174). Last ventral segment of the male abdomen, even when apically angulate, not furnished with an apical tubercle; prosternal spine stout; dorsal disk of prozona tumid, independently of the metazona; tegmina fully developed or abbreviated . . . . . ŒDALEONOTUS, Scudder.

176 (167). Tegmina wanting; the sides of first abdominal segment not provided with a tympanum . . . . . PHILOCLEON, Scudder.

177 (128). Posterior tibiæ armed on the external edge often with six or seven spines, never with more than eight.

178 (185). Frontal costa straight, between the antennæ very little or not at all produced.

179 (182). Frontal costa percurrent. Eyes narrow, fully twice as long as broad. Tegmina variable.

180 (181). Tegmina and wings complete. Hind femora with the

dorsal carinæ smooth. Frontal costa plane above the ocellus, narrowed below and sulcate. Hind tibiæ seven-spined externally . . . . . OSMILIA, Stål.

181 (180). Tegmina abbreviate, lateral. Hind femora with the dorsal carinæ tuberculate or toothed. Frontal costa sulcate throughout, of about equal width. Hind tibiæ eight-spined externally . . . . . TÆNOPHAUS, Bruner.

182 (179). Frontal costa obliterated towards the clypeus. Tegmina lobiform. Eyes broader.

183 (184). Pronotum with the transverse sulci faint or obsolete; the body glabrous . . . . . PERIXERUS, Gerstaecker.

184 (183). Pronotum with the transverse sulci strongly impressed; the body not glabrous . . . . . DACTYLOTUM, Charpentier.

185 (178). Frontal costa plainly produced between the antennæ. Body apterous or the tegmina alone present, lobiform, lateral.

186 (187). Posterior femora with the lower margin sinuate before the genicular lobes. Tegmina lobiform . . . . . AGESANDER, Stål.

187 (186). Posterior femora with the lower margin straight. Tegmina absent, linear, squamiform, or spatulate.

188 (189). Pronotum cylindrical . . . . . RHYTIDOCHROTA, Stål.

189 (188). Pronotum more or less tectate or cristate. Fastigium depressed.

190 (193). Median carina of the pronotum not greatly elevated, only slightly lobate. Body not robust, the tegmina present.

191 (192). Male cerci furcate; tegmina squamiform, very minute, not attaining the hind margin of the mesothorax; antennæ long and slender . . . . . RHACHICREAGRA, Rehn.

192 (191). Fastigium horizontal; the male cerci acuminate; tegmina broadly spatulate, reaching the hind margin of the first abdominal segment; antennæ short and fairly heavy . . . . . MICROTYLOPTERYX, Rehn.

193 (190). Median carina of the pronotum strongly serrato-lobate. Body robust, apterous . . . . . [POLYSARCUS, Saussure.*]

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* The genera *Pedies* and *Pœpedetes* of Saussure are so poorly characterized that it has been impossible to locate them in this synoptic table. They probably belong in the neighbourhood of *Dactylotum*, but this is only conjecture on the part of the present writer. Walker's *Calacris* has also been excluded from the table for the same reason. It is perhaps related to, or even identical with, *Proctolabus*, Saussure. The species, however, seems to be distinct from *P. mexicanus*, Sauss., and the others that are described on a succeeding page of the present work. It has also been found necessary to place Saussure's genus *Pegasidion* among the doubtful ones, and include it here on account of the clause "prosternum cornu cylindrico armatum," contained in the description of the genus. None of the genera and species here referred to have been recognized among the material studied for this enumeration.

PROCOLPIA, Stål.

Xiphocera, Latreille, in part.

Xiphicera, Serville, Ann. Sci. Nat. xxii. p. 271 (1831); Hist. Orthopt. p. 611 (1839) (in part.).

Procolpia, Stål, Recens. Orthopt. i. pp. 28, 45 (1873); Syst. Acrid. p. 15 (1878); Pict. et Sauss. Cat. Acridiens, i. p. 10 (1887).

This genus seems to be represented throughout a large portion of Tropical America by a single species, which has been described at least twice.

1. **Procolpia emarginata,** Serville. (*Munatia inclarata*, Tab. III. figg. 1, 1 *a*, ♂.)

Xiphicera emarginata, Serv. Ann. Sci. Nat. xxii. p. 271 (1831)[1]; Rev. Méthod. Orthopt. p. 80 (1831)[2]; Hist. Orthopt. p. 612 (1839)[3].

Xiphocera emarginata, Burm. Handb. Ent. ii. p. 614 (1839)[4].

Procolpia emarginata, Stål, Recens. Orthopt. i. p. 45 (1873)[5]; Pict. et Sauss. Cat. Acrid. i. p. 10 (1887)[6].

Xiphocera inclarata, Walk. Cat. Dermapt. Salt. Brit. Mus. iii. p. 523 (1870)[7].

Munatia inclarata, Bruner, MSS.

Hab. Mexico, Atoyac in Vera Cruz (*Schumann*, *L. Bruner*), Orizaba[7]; Costa Rica, Pozo Azul (*M. A. Carriker*).—Tropical South America[1–6].

An examination and comparison of specimens from various localities indicate that they all belong to a single species that varies somewhat in colour and size. Both sexes are represented in the material studied. The sexual difference in size is very marked, the female being fully twice as large as the male.

MUNATIA, Stål.

Munatia, Stål, Obs. Orthopt. i. p. 28 (1875); Syst. Acrid. p. 15 (1878).

Like the preceding, the present genus belongs strictly to the tropics of America, where it is represented by two or more species. Only one of them seems to reach the region under investigation.

1. **Munatia punctata,** Stål.

Munatia punctata, Stål, Bih. till K. Svens. Vet.-Akad. Handl. iii. no. 14, p. 28 (1875)[1]; Pict. et Sauss. Bull. Soc. Ent. Suisse, vii. p. 340 (1887)[2]; Cat. Acrid. i. p. 10 (1887)[3]; Rehn, Proc. Acad. Nat. Sci. Phil. 1905, p. 405, figs. 4, 5[4].

Hab. Costa Rica[4] (*Biolley*), Juan Viñas (*L. Bruner*: ♀); Panama[1–3].

The above references without doubt all belong to a single species. Two other forms (or a very variable single species) of the genus occur in Paraguay and Southern Brazil. These insects are to be found among the vines and other herbage that unite

in making the almost impenetrable jungles at the borders of forests. It is possible that they also occur among the fallen leaves within the shadows of the forests themselves.

ÆOLACRIS, Scudder.

Xiphicera, Auct., in part.

Æolacris, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 269, footnote (1874); Pict. et Sauss. Cat. Acrid. i. p. 10 (1887); Gig.-Tos, Boll. Mus. Torino, xiii. no. 311, p. 41 (1898).

While no specimens of the genus *Æolacris* have come to light among the material studied for this work, it is quite certain that it occurs upon the Isthmus of Panama and possibly even in Costa Rica. Pictet and Saussure give both Ecuador and Colombia as habitats for members of the genus. The species probably are:—

1. **Æolacris octomaculata,** Scudder.

Xiphicera octomaculata, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 337 (1869) [1].

Æolacris octomaculata, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 269 (1875) [2]; Pict. et Sauss. Cat. Acrid. p. 13 (1887) [3]; Gig.-Tos, Boll. Mus. Torino, xii. no. 301, p. 3 (1897) [4].

Hab. South America, Ecuador [1 2 4], Peru [3].

Giglio-Tos [4] intimates that this insect is an *Elæochlora* and possibly the same as *E. octolunata*, Serville.

2. **Æolacris caternaulti,** Feisth.

Xiphicera caternaulti, Feisth. in Guérin's Mag. Zool. 1837, t. 184 [1].

Æolacris caternaultii, Pict. et Sauss. Cat. Acrid. i. p. 13 (1887) [2].

Xiphicera octolunata, Serv. Hist. Orthopt. p. 615 (♂) (1839) [3].

Xiphicera tricristata, Serv. loc. cit. p. 613 (♀) [4].

Hab. South America, Colombia [2–4], Cayenne [1].

PRIONOLOPHA, Stål.

Prionolopha, Stål, Recens. Orthopt. i. p. 27 (1873); Syst. Acrid. p. 14 (1878); Pict. et Sauss. Cat. Acrid. i. p. 5 (1887).

This genus is represented in the Lesser Antilles and in the northern portion of South America, and almost certainly extends to Panama. While only one or two species are recognized, there is much variation among the specimens from different localities. When carefully collected and studied there will no doubt be additional forms of the genus to record. *P. serrata* is more or less arboreal in its habits, and is not uncommon in Colombia.

1. **Prionolopha serrata,** Linn.

Gryllus (*Bulla*) *serratus,* Linn. Syst. Nat. 10th ed. p. 427 (1758) [1].

Acridium serratum, DeG. Mém. Ins. iii. p. 493, t. 41. fig. 6 (1773) [2].

Pamphagus serratus, Thunb. Mém. Acad. St. Pétersb. v. p. 260 (1815) [3].
Xiphocera serrata, Burm. Handb. Ent. ii. p. 614 (1838) [4].
Tropinotus serratus, Serv. Hist. Orthopt. p. 618 (1839) [5].
Acrydium serrato-fasciatum, DeG. Mém. Ins. iii. p. 495, t. 42. fig. 2 (1773) [6].
Pamphagus lateralis, Thunb. Mém. Acad. St. Pétersb. v. p. 260 (1815) [7].
Prionolopha serrata, Stål, Recens. Orthopt. i. p. 44 (1873) [8].

Hab. TROPICAL SOUTH AMERICA [1–8]; TRINIDAD (*Tryhane*, *Chipman*).

TROPINOTUS, Serville.

Tropinotus, Serv. Hist. Orthopt. p. 617 (1839); Bruner, Proc. U.S. Nat. Mus. xxx. p. 645 (1906).
Tropidonotus, Stål, Syst. Acrid. i. p. 14 (1877).

This is another characteristic South-American genus that is represented north of the Isthmus of Panama. At least fifteen or sixteen species are already known to science, and additional forms no doubt occur in the vast unexplored forests of Brazil and other tropical portions of the country lying to the east of the Andes. Two species only are known to me from within our region.

1. **Tropinotus rosulentus**, Stål.

Trapidonotus rosulentus, Stål, Bihang till K. Svens. Vet.-Akad. Handl. v. no. 9, p. 19 (1878) [1].
Tropidonotus rosulentus, Pict. et Sauss. Cat. Acrid. i. p. 5 (1887) [2]; Bruner, Bull. Lab. Nat. Hist. Univ. Iowa, iii. p. 64, t. 3. fig. 5 (1895) [3].
Tropinotus rosulentus, Bruner, Proc. U.S. Nat. Mus. xxx. p. 645 (1906) [4].

Hab. NICARAGUA (*Rev. T. Heyde* [3]); COSTA RICA, Pozo Azul (*C. F. Underwood & M. A. Carriker*).—COLOMBIA [1 2].

2. **Tropinotus mexicanus**, Bruner. (Tab. III. fig. 2, ♀.)

Tropinotus mexicanus, Bruner, Proc. U.S. Nat. Mus. xxx. p. 645 (1906) [1].

This species belongs to the group in which the pronotal crest is more or less strongly crenulate, and is related to both *T. discoideus*, Serv., and *T. angulatus*, Stål. From *T. discoideus* it differs in the much shorter and more robust hind femora, and the broader pronotum, in which the different sections of the crest are attingent or approximate, instead of distinctly separated; and from *T. angulatus* by the broader and shorter wings, and the higher and more strongly arched pronotal crest, as well as in the greater disparity between the sizes of the sexes.

General colour varying from a pale testaceo-cinereous tinged with green to a dark brownish-lavender, the dusky transverse bars of the tegmina in some specimens very prominent and in others represented only in outline; the scattered tubercles of the pronotum always black or black-tipped.

Length of body, ♂ 30–32, ♀ 47–50; of pronotum, ♂ 12, ♀ 18; of tegmina, ♂ 25, ♀ 36; of hind femora, ♂ 19, ♀ 27 millim.

Hab. MEXICO, Vera Cruz (*Rev. T. Heyde* [1]), Temax and other localities in Yucatan (*Gaumer* [1]).

This locust appears to be the most northerly distributed species of *Tropinotus*, and is likewise the most robust in form. The described members of the genus are tabulated

in vol. xxx. of the 'Proceedings of the United States National Museum,' on pages 645 and 646.

DRACOTETTIX, Bruner.

Dracotettix, Bruner, Proc. U.S. Nat. Mus. xii. p. 49 (1889).

The present genus inhabits the upper austral region of the South-western United States, where several species are represented, and certainly extends into Northern Mexico. The three known forms may be separated by the subjoined table. *D. monstrosus* may be considered the type of the genus.

Synopsis of the Species of Dracotettix.

A¹. Median carina of the pronotum very prominent and strongly arched both in front and behind the principal sulcus. Fastigium bluntly longitudinally carinate.

*b*¹. Anterior lobe of the pronotum strongly arched and deeply trilobed; the transverse groove of the face deeply impressed so as to completely sever the carinæ of the frontal costa . . . . . 1. *monstrosus*, Bruner.

*b*². Anterior lobe of the pronotum less prominent and less strongly arched, only gently trilobed; the transverse sulcus of the face not, or but slightly, impressed, not severing the carinæ of the frontal costa . . . . . 2. *californicus*, sp. n.

A². Median carina of the pronotum much less prominent and only gently arched in front of and behind the principal sulcus. Fastigium of the vertex strongly longitudinally carinate . . . . . [3. *plutonius*, Bruner.]

1. **Dracotettix monstrosus**, Bruner. (*Draconotus monstrosus*, Tab. III. figg. 3, 3 *a*, ♂; 4, ♀.)

Dracotettix monstrosus, Bruner, Proc. U.S. Nat. Mus. xii. p. 50, t. 1. fig. 1 (1889)[1].

Draconotus monstrosus, Bruner, MSS.

Hab. North America, Los Angeles, California (*D. W. Coquillett*[1]).

While no specimens of this insect are at hand from Mexican territory, it is not unreasonable to expect it to extend further southward.

2. **Dracotettix californicus**, sp. n.

Similar to *D. monstrosus* in general appearance, but somewhat smaller and shorter winged. As compared with that species, the median carina of the pronotum is lower and less strongly arched, and the lobes of the anterior portion much smaller; the transverse groove of the face is shallower, so that the frontal costa is not severed by it and in some cases not even lowered at the point of crossing. The hind tibiæ of the present species are without the blood-red colour on the inner face, which is common to both *D. monstrosus* and *D. plutonius*.

Length of body, ♀, 36; of pronotum 11, of tegmina 9, of hind femora 14 millim.

Hab. North America, Santa Cruz Mts., Gilroy, and Napa, California (*coll. L. Bruner*), Southern Arizona (*G. W. Dunn, in coll. L. Bruner*).

The two specimens from Arizona, both of which are discoloured by immersion in

alcohol, differ from the three others from California in the absence of the transverse depression in the frontal costa described in connection with *D. monstrosus*. It is barely possible that they represent a fourth species of the genus. They also show some other slight modifications from the characters ascribed to both the present species and to *D. monstrosus*. As *D. californicus* occurs in the country adjacent to the Mexican frontier, it is included here.

[3. **Dracotettix plutonius,** Bruner. (*Draconotus plutonius*, Tab. III. figg. 5, 5 *a*, ♂.)

Dracotettix plutonius, Bruner, N. Am. Fauna, vii. pp. 267, 268 (1893)[1]; Scudd. Cat. Orthopt. U.S. p. 45 (1900)[2].

Hab. North America, Death Valley and Panamint Valley, California (*A. Koebele*[1]).

This is the smallest of the three species, and, on account of its restriction to regions of peculiar characteristics, may not reach south of the Mexican border.

COLPOLOPHA, Stål.

Colpolopha, Stål, Orthopt. Nov. (Öfv. Vet.-Ak. Förh. 1873, no. 4) p. 52; Recens. Orthopt. i. pp. 28, 45 (1873); Syst. Acrid. i. p. 14 (1878); Pict. et Sauss. Cat. Acrid. i. p. 8 (1887).

This is still another tropical South-American genus representatives of which enter our region. It contains at least half a dozen recognized species, three of which have been taken in Central America. These, with an additional one, are separable by the following table. All of them are dull-coloured (of various shades of brown or dead leaf-colour), and they may be found among the fallen leaves in and about the edges of tropical forests, from near sea-level to a considerable altitude above the sea. They enjoy a rather wide distribution, some of them occurring from Paraguay and Peru to Guatemala.

Synopsis of the Species of Colpolopha.

A[1]. Sulcus of the frontal costa not attaining the vertex. Tegmina and wings slightly shorter than the abdomen, the former with the apex obliquely excised. Lateral carinæ of pronotum strongly dentate . . . . . 1. *latipennis*, Stål.

A[2]. Sulcus of the frontal costa continued to the apex of the fastigium. Tegmina and wings variable, complete or abbreviate, the apex of the former excised or acuminate. Lateral carinæ of pronotum bluntly toothed, crenulate or smooth.

b[1]. Rostrum of the vertex angulate. Crest straight, but little or not at all elevated behind. Tegmina and wings conspicuously surpassing the apex of both the abdomen and hind femora, their apex sinuately truncate.

c[1]. Wings at base pale blue, smoky hyaline beyond . . . . . 2. *obsoleta*, Serville.

c[2]. Wings at base pale yellowish, the radial area and posterior margin infuscated . . . . . 3. *sinuata*. Stål.

*b*². Rostrum or fastigium of the vertex in front, rounded. Crest of the pronotum elevated posteriorly. Tegmina about as long as, or a little shorter than, the abdomen, their apex acuminate. Wings with the disc red . . . . . 4. *bruneri*, Rehn.

1. **Colpolopha latipennis**, Stål? (*C. sinuata*, Tab. II. figg. 25, 25 *a*, ♀.)

Colpolopha latipennis, Stål, Bih. till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 19 (1887) [1].

Hab. CENTRAL AMERICA (*Rev. T. Heyde, in coll. L. Bruner*).—SOUTH AMERICA, Peru [1].

The insect doubtfully referred to as *C. latipennis*, Stål, was first determined as *C. sinuata*, which has the frontal costa sulcate to the fastigium, but a more careful study has decided me to place it here instead. The single specimen seen, a female, was given to me by Mr. Heyde.

2. **Colpolopha obsoleta**, Serville.

Tropinotus obsoletus, Serv. Hist. Orthopt. p. 620 (1839) [1].
Colpolopha obsoleta, Pict. et Sauss. Cat. Acrid. i. p. 8 (1887) [2].

Hab. SOUTH AMERICA, Colombia and British Guiana (*coll. L. Bruner*), Peru [2].

Probably extends to the Isthmus of Panama.

3. **Colpolopha sinuata**, Stål.

Colpolopha sinuata, Stål, Öfv. Vet.-Akad. Förh. no. 30, 4, p. 53 (1873) [1]; Recens. Orthopt. i. p. 45 (1873) [2]; Pict. et Sauss. Cat. Acrid. i. p. 8 (1887) [3].

Hab. COLOMBIA, Remedios [1 2]; PERU [3].

While no specimens of this species are at hand from our region, there is scarcely any doubt but that it will be found as far north as Costa Rica, if not in Nicaragua as well. In fact, while collecting in the former country several years ago, a locust was seen but not taken by the writer that was referred to *C. sinuata*.

4. **Colpolopha bruneri**, Rehn.

Colpolopha bruneri, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 406–408 [1].

Hab. COSTA RICA (*Biolley*), Monte Redondo (*L. Bruner* [1]).

One male and two females of this species were captured by the present writer in Costa Rica, in the month of February, and various others have been found by Prof. Biolley. It is variable both in size and colour, as well as in some minor structural characters. Specimens are at hand that exceed Rehn's measurements by at least 5 millimetres, while others lack nearly as many in being as large as his types. The pointed or acuminate tegmina and vermilion wings are sufficient characters to separate *C. bruneri* from all other described forms.

DRACONATA, Pictet et Saussure.

Draconata, Pict. et Sauss. Bull. Soc. Ent. Suisse, vii. p. 341 (1887).

According to Pictet and Saussure this genus occurs sufficiently close to the Isthmus of Panama to permit of its being included, at least provisionally, in the Central-American fauna. Only a single species is known.

1. **Draconata mancus,** Pictet et Saussure.

Draconata mancus, Pict. et Sauss. Bull. Soc. Ent. Suisse, vii. p. 342 (1887)[1]; Cat. Acrid. i. p. 12 (1887)[2].

Hab. COLOMBIA [1 2].

Unknown to me.

CIBOTOPTERYX, Rehn.

Cibotopteryx, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 408.

Cibotopteryx is an interesting Tropical-American genus related to *Elæochlora,* and in which the male and female individuals differ greatly in size. But a single species is known and is referred to below.

1. **Cibotopteryx variegata,** Rehn. (*Elæochlora juvenalis*, Tab. II. figg. 23, ♀; 24, 24 *a*, ♂.)

Cibotopteryx variegata, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 408–410, figg. 8, 9[1].

Elæochlora juvenalis, Bruner, MSS.

Hab. COSTA RICA, Guaitil [1]; CENTRAL AMERICA (*Rev. T. Heyde, in coll. L. Bruner*: ♂ ♀).

The specimens (two males and five females) in the collection of the present writer are marked simply "Central America." They may have been taken in Costa Rica or Nicaragua, since the Rev. Mr. Heyde travelled in various parts of Central America and collected wherever he went. Since only the male has been described, the accompanying short diagnosis of the female is added:—

♀. Extremely robust, the extreme width being nearly one-half as great as the length. Tegmina abbreviated, shorter than the abdomen and provided with three prominent longitudinal veins, as shown in fig. 23 of the Plate; wings minute. Pronotum large, broad, furnished upon the disk with a number of prominent, round, polished tubercles; the lateral carinæ conspicuous, composed of a series of rounded teeth or tubercles which are largest on the anterior lobe; the median carina very broad and strongly elevated, the anterior portion strongly trilobed, the distinct lobes widely separated, the posterior portion a little less elevated, straight. Hind femora longer than the abdomen, only moderately heavy; hind tibiæ as long as the femora, coarse and provided with conspicuously elongated spines on the inner margin, those on the outer margin of ordinary size.

The colour of the female in general is similar to that of the male, but duller and less contrasted. The carinæ of the pronotum lack the black, and the hind tibiæ are sometimes dull brownish-olive with only a tinge of red, while in other specimens they are dull wine-red.

Length of body 42, of antennæ 20, of pronotum 20; greatest width of pronotum 14; length of tegmina 18, width 11; length of hind femora 23·5 millim.

ELÆOCHLORA, Stål.

Elæochlora, Stål, Öfv. Vet.-Akad. Förh. 1873, no. 4, p. 52 ; Recens. Orthopt. i. pp. 28, 45 (1873); Syst. Acrid. i. p. 16 (1878) ; Pict. et Sauss. Cat. Acridiens, i. p. 13 (1887).

This genus contains a number of large showy locusts that are distributed throughout South America, from the northern parts of the United States of Colombia to the Colorado River of Argentina. While no records or material at hand indicate its occurrence within our region, it is quite likely that at least two species in their distribution reach northward beyond the Isthmus. They are the following:—

1. **Elæochlora granulosa,** Stål.

Elæochlora granulosa, Stål, Obs. Orthopt. i. p. 28 (1875)[1] ; Pict. et Sauss. Cat. Acridiens, i. p. 15 (1887)[2].

Hab. Colombia, Bogota [1 2].

2. **Elæochlora longispina,** Pictet et Saussure.

Elæochlora longispina, Pict. et Sauss. Cat. Acridiens, i. pp. 15, 16 (1887)[1].

Hab. Colombian Andes [1].

DICTYOPHORUS, Thunberg.

Dictyophorus, Thunberg, Mém. Acad. Pétersb. v. p. 217 (1815) ; Stål, Recens. Orthopt. i. pp. 32, 50 (1873) ; Syst. Acrid. i. p. 17 (1878).
Romalea, Serville (in part.), Ann. Sci. Nat. xxii. p. 280 (1831) ; Hist. Orthopt. p. 621 (1839).
Rhomalea, Burmeister (in part.), Handb. Ent. ii. p. 619 (1838).

While no definite records or specimens are at hand to warrant the inclusion of *Dictyophorus* among Mexican Acridiens, the occurrence of two forms throughout all the States of the Union bordering on the Gulf of Mexico seems sufficient reason for placing it among the genera to be looked for in Mexico.

1. **Dictyophorus marci,** Serville.

Romalea marci, Serv. Hist. Orthopt. p. 623 (1839)[1] ; Thomas, Acrid. N. Am. p. 180 (1873)[2].
Dictyophorus marci, Bruner, Rep. U.S. Ent. Comm. iii. p. 58 (1883)[3].

Hab. North America, Southern United States [1–3].

This insect is somewhat smaller and much darker coloured than the next species, and is also much rarer.

2. **Dictyophorus micropterus,** Palisot de Beauvois.

Acridium micropterum, Pal. Beauv. Ins. Afr. et Amér. p. 146, t. 4. fig. 4 (1805)[1].
Romalea microptera, Serv. Hist. Orthopt. p. 622 (♂ ♀) (1839)[2].
Rhomalea microptera, Charp. Orthopt. Depict. et Descript. t. 49 (♀ ♂) (1845)[3].

Gryllus guttatus, Stoll, Sauterelles, t. 10 *b*. fig. 34 (♀) (1787) [4].
Rhomalea gigantea, Burm. Handb. Ent. ii. p. 619 (1838) [5].
Romalea centurio, Thomas, Acrid. N. Am. p. 179 (ex synon.) [6].
Rhomalea centurio, Burm. Handb. Ent. ii. p. 620 (♀, not ♂) (1838) [7].

Hab. North America, Southern United States [1–7].

There are specimens in the collection of the writer coming from Florida and Texas, and there is but little doubt that the distribution includes Northern Mexico as well.

LITOSCIRTUS, gen. nov.

Related to both *Dictyophorus* and *Tæniopoda* in some of its characters, but differing from them in others, as will be seen by a reference to the synopsis of the genera (*anteà*, pp. 209–222).

Pronotum provided with distinct lateral carinæ throughout; the median carina prominent, subcristate, slightly arcuate both in front and behind the principal sulcus, on the anterior portion gently trilobed; the disk rugosely wrinkled. Antennæ short, coarsely filiform, gently clavate. Head a little narrower than the front edge of the pronotum, the vertex about as wide as the shortest diameter of one of the eyes in the male, in the female a little wider, the fastigium only gently depressed, rather profoundly sulcate and furnished with a median longitudinal carina which enters it from behind, not quite complete in the male; frontal costa reaching the clypeus, fairly prominent, contracted at the sides just below the ocellus, deeply sulcate in the vicinity of the latter. Tegmina and wings complete, the former coriaceous, rather closely veined, of moderate width, the apex rounded and extending beyond the tip of the abdomen in both sexes, the wings about twice as long as broad, the area of dilation and parallel veins inconspicuous. Hind femora robust, about reaching (♀) or slightly surpassing the tip of the abdomen (♂), their superior carina distinctly serrate; hind tibiæ nine-spined externally, eight-spined internally, those on the inside slightly largest.

1. **Litoscirtus insularis**, sp. n. (Tab. III. figg. 6, 6 *a*, ♀.)

General colour brownish-testaceous, more or less plainly marked with piceous on the pronotal carinæ. Tegmina irregularly marked with dark brown flecks and blotches, especially on the costal margin and in the discal area of the basal half; wings yellowish hyaline, with the veins and veinlets of the apical portion and costal area dark brown, the apical portion slightly infuscated. Hind femora dimly bifasciate with fuscous across the upper edge and outer face, internally on the basal half and the lower sulcus black. Tibiæ brownish-testaceous, the spines black-tipped.

Length of body, ♂ 25, ♀ 38; of pronotum, ♂ 9, ♀ 11; of tegmina, ♂ 25, ♀ 32; of hind femora, ♂ 14, ♀ 18; of antennæ, ♂ 8, ♀ 9 millim.

Hab. Lower California, Cerros I. (*coll. U.S. Nat. Museum*: ♂, ♀, and nymph).—Central America (*coll. Calif. Acad. Sciences*: ♀).

All of the specimens examined seem to have been preserved in alcohol and afterwards pinned, and accordingly have lost their colours or have them somewhat modified.

TÆNIOPODA, Stål.

Tæniopoda, Stål, Recens. Orthopt. i. pp. 32, 50 (1873); Syst. Acrid. i. p. 17 (1873); Pict. et Sauss. Cat. Acridiens, i. p. 17 (1887); Bolivar, Bol. Soc. Esp. Hist. Nat. 1901, pp. 264–270.
Rhomalea, Burm. Handb. Ent. ii. p. 619 (1838) (in part.).

The genus *Tæniopoda*, with *T. superba* as type, is a much larger one than has heretofore been generally conceded. The material at hand indicates upwards of a dozen

species, but no doubt a little careful collecting in various parts of Mexico and Central America will add considerably to the number. These large, highly-coloured locusts occur in suitable localities from Southern Costa Rica to Southern Texas, New Mexico, and Arizona. No single species seems to be very widely distributed, but each locality has its characteristic form. The following table, which is based in part on that of Bolivar, will give the reader a general idea of the various forms and their relationships:—

Table for separating the Species of Tæniopoda.

A¹. Median carina of the pronotum comparatively low, especially on the posterior lobe, where it is nearly straight and not strongly arcuate as in the alternative category.

*b*¹. General colour black, deep green, or fuscous, the head and pronotum bordered with, and the carinæ, yellowish or reddish.

*c*¹. Tegmina and wings with a narrow apical pale border . . . . 1. *burmeisteri,* Bol.

*c*². Tegmina and wings without the narrow apical pale border . . 2. *picticornis,* Walk.

*b*². General colour brown or testaceous, with or without the ferruginous or testaceous line on the head and pronotum.

*c*¹. Form rather slender or only moderately robust, even in the females. Colour largely testaceous.

*d*¹. Median carina of the anterior lobe of the pronotum arcuate; antennæ, except the two basal and several apical joints (which are black), red, very narrowly annulate with black. Frontal carinæ concolorous or pale . . . . . 3. *ståli,* Bruner.

*d*². Median carina of the anterior lobe of the pronotum straight; antennæ lemon-yellow, the two basal joints inclusive (the apical ones are missing in both specimens at hand). Carinæ of the pronotum shiny black . . . . . 4. *citricornis,* sp. n.

*c*². Form, of female at least, very robust (the male is not known). General colour "burnt-sienna." Median carina and posterior margin of the pronotum ferruginous, the former bordered with black . . . . . 5. *tamaulipensis,* Rehn.

A². Median carina of the pronotum very high, quite strongly arcuate on both lobes.

*b*¹. Crest of pronotum and lateral carinæ adorned with black lines. The crest of the hind lobe usually higher than that of the front lobe.

*c*¹. The crest of the pronotum usually marked with a narrow pale median line.

*d*². Tegmina with the veins chiefly pale. Hind femora nearly or quite as long as the abdomen in the female.

*e*¹. Size very large (♀ 62 mm. or more in length); the sexes conspicuously unequal. Tegmina of the females as long as,

or a little longer than, those of the male, always decidedly longer than the abdomen.

f^1. Tegmina largely yellow, the apex margined with black. Crest of the anterior lobe of the pronotum margined with black, the lateral carinæ not infuscated. [Honduras.] 6. *superba,* Stål.

f^2. Tegmina dull black with brownish-testaceous veins. The crest of the pronotum black throughout, save at the front end, where the pale median line shows to a limited extent. Lateral carinæ generally blackened. [Costa Rica and Nicaragua.] . . . . . 7. *maxima,* sp. n.

e^2. Size smaller (♀, length 45 mm. or less), the sexes more nearly equal in stature. Tegmina of the female often shorter than the abdomen, those of the male not, or but little, surpassing its apex . . . . . 8. *gutturosa,* Bol.

d^2. Tegmina with the veins, at least in part, infuscated, as well as the background. Hind femora scarcely reaching the apex of the abdomen, even in the males. Form unusually robust. Disk of the pronotum on the hind lobe much flattened and terminating in a right angle or only gently acute . . . . 9. *obscura,* sp. n.

c^2. Crest of the pronotum totally black.

d^1. Tegmina together with their veins mostly black or brown. Anterior lobe of the pronotum with the crest a little lower than that on the hind lobe, the latter decidedly acuminate. Abdomen mostly black . . . . . 10. *bicristata,* sp. n.

d^2. Tegmina flavous or ochraceous mottled with black. Abdomen largely ochraceous . . . . . 11. *centurio,* Drury.

b^2. Crest of the pronotum and lateral carinæ concolorous, unadorned with black.

c^1. Hind margin of the pronotum rather obtuse, nearly a right angle, the lateral margins straight . . . . . 12. *auricornis,* Walk.

c^2. Hind margin of the pronotum decidedly acute-angled, the lateral margins arcuate.

d^1. Body of the usual form, not excessively deep at meso- and metathorax. Hind femora slender. [Costa Rica.] . . . 13. *varipennis,* Rehn.

d^2. Body very high at meso- and metathorax. Hind femora robust. [Vera Cruz, Mexico.] . . . . . 14. *pulchella,* Bol.

1. **Tæniopoda burmeisteri,** Bolivar.

Tæniopoda burmeisteri, Bolivar, Bol. Soc. Esp. Hist. Nat. 1901, pp. 265, 266[1].

Hab. Mexico[1].

I have not recognized *T. burmeisteri,* but, judging from Bolivar's description, it must be a distinct species, approaching *T. picticornis,* Walk., which has priority over the insect described by Stål under the same name.

2. **Tæniopoda picticornis,** Walker. (Tab. II. fig. 17, ♂.)

Rhomalea picticornis, Walk. Cat. Dermapt. Salt. Brit. Mus. iii. p. 538 (1870)[1]; Thomas, Acrid. N. Am. p. 240 (1873)[2].

Tæniopoda picticornis, Caudell, Proc. U.S. Nat. Mus. xxvi. p. 795 (1903)[3].

Hab. North America, Texas[3], Southern Arizona (*L. Bruner*).—Mexico, at various localities in Northern and Central Mexico (*Townsend, Ward, Rehn, &c.*), Villa Lerdo in Durango (*L. Bruner*), Mesquitic in Jalisco (*U.S. Biol. Survey*), Jalisco (*Schumann*).

This seems to be the most widely distributed species of the genus, as it occurs from Texas and Arizona to Morelos in Southern Mexico, and is fairly abundant wherever found. It is an insect of the tablelands and drier mountain-regions, rather than of the low, wet, and heavily-timbered portions of Mexico. Specimens were found in November at Villa Lerdo and at Mesquitic in August.

3. **Tæniopoda ståli,** nom. n. (Tab. II. fig. 18, ♂.)

Tæniopoda picticornis, Stål, Recens. Orthopt. i. p. 51 (1873)[1]; Pict. et Sauss. Cat. Acrid. i. p. 17 (1887)[2]; Bolivar, Bol. Soc. Esp. Hist. Nat. 1901, pp. 265, 267[3]; Rehn, Trans. Amer. Ent. Soc. xxviii. p. 97 (1900)[4].

Hab. Mexico[1–4], Amula in Guerrero, 6000 feet (*H. H. Smith*), Guerrero (*O. W. Barrett*), Territory of Tepic (*coll. Calif. Acad. Sciences*).

T. ståli, especially in the female, is more graceful in form than the same sex of *T. picticornis,* Walk., and is also more restricted in its distribution. Some specimens have the apical portion of the tegmina infuscated. Those with the infuscation of the tegmina come from Tepic.

4. **Tæniopoda citricornis,** sp. n. (*T. centurio,* Tab. II. figg. 19, 19*a*, ♂.)

Tæniopoda centurio, Bruner, MSS. (nec Drury).

This insect is of the same general form and colour as *T. ståli,* but it can at once be recognized from that species by its bright lemon-yellow antennæ (the apices of the joints of which are not black), and by its lower, nearly straight, median carina of the pronotum, which is shiny black throughout, as are also the prominent lateral carinæ. The anterior and posterior extremities of the disk of the pronotum of *T. citricornis* are a trifle blunter than in the species to which it has just been compared. Its hind femora are without the black genæ and upper and lower edges of these members as usually found in *T. ståli.*

Length of body, ♂, 41; of pronotum 12, of tegmina 37, of hind femora 21 millim.

Hab. Mexico, Venta de Peregrino in Guerrero (*H. H. Smith*).

5. **Tæniopoda tamaulipensis,** Rehn.

Tæniopoda tamaulipensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, pp. 531, 532[1].

Hab. Mexico, Altamira in Tamaulipas[1].

Unknown to me, but apparently distinct from all the other forms tabulated in the preceding synoptic table.

6. **Tæniopoda superba,** Stål.

Monachidium superbum, Stål, Öfv. Vet.-Akad. Förh. 1855, p. 352 [1].

Tæniopoda superba, Stål, Recens. Orthopt. i. p. 50 (1873) [2]; Pict. et Sauss. Cat. Acrid. i. p. 17 (1887) [3]; Rehn, Trans. Amer. Ent. Soc. xxix. p. 12 (1902) [4] (in part.).

Hab. British Honduras [1–3], Rio Sarstoon (*Blancaneaux*); Guatemala, Panzos in Vera Paz (*Champion*).

Specimens from Costa Rica differ from the Honduras and Guatemalan form in the points given in the table for separating *T. superba* and *T. maxima.*

7. **Tæniopoda maxima,** sp. n.

About the same size as, or even a trifle larger than, *T. superba*, but differing from that species in the narrower and shorter tegmina, which are dull black, with brownish-testaceous nervures, instead of largely yellowish mottled with black and with the apex also black. The wings of *T. maxima* are also much smaller, and have the black and red portions more in contrast than in *T. superba.* The legs and abdomen of *T. maxima* are also much darker-coloured than in the more northern form.

Length of body, ♂ 44, ♀ 68; of pronotum, ♂ 18, ♀ 26; of tegmina, ♂ ♀, 44; greatest width of tegmina, ♂ ♀, 14; length of hind femora, ♂ 25, ♀ 30 millim.

Hab. Costa Rica, Limon (*M. A. Carriker*: ♂ ♀).

The specimens in the series before me are similar in size, wing-length, and colour, and illustrate local variation, at least, if not specific distinction.

8. **Tæniopoda gutturosa,** Bolivar.

Tæniopoda gutturosa, Bolivar, Bol. Soc. Esp. Hist. Nat. 1901, pp. 265, 268 [1].

Hab. Guatemala, San Gerónimo (*Champion*), Escuintla [1].

The collection before me contains several specimens of both sexes that seem to belong here. They vary somewhat in wing-length, as well as in the amount of dusky mottling on the tegmina, which is produced by some of the interspaces between the nervures being slightly infuscated. The head is varied more or less strongly on the occiput and facial carina with orange. There are also other examples at hand marked simply "Guatemala" (*coll. U.S. Nat. Mus.*) that indicate a well-marked variety, if not a good species. Their measurement is much greater, while their colour is largely ferruginous, orange, and crimson about the head and thorax. In structure, however, they do not greatly differ from Bolivar's description. They measure as follows:— Length of body, ♀, 47; of pronotum 17·5, of tegmina 31, of hind femora 25 millim. The name *T. aurantia,* Bruner, can be used for them, if they prove to be distinct.

9. **Tæniopoda obscura,** sp. n. (Tab. II. figg. 21, 21 *a*, ♂.)

A large, robust species, the prevailing colour of which is brown and dull black, even the tegmina partaking of these tints to a great extent. The pronotum is unusually broad and flattened on the disk of the hind lobe, making the shoulders or lateral carinæ appear very prominent; the anterior lobe is fully as long as, or longer than, the hind lobe and markedly higher than it. The colour of the tegmina, as stated above,

is largely brown or dull black, the lighter portions being confined to a few scattered blotches of testaceous towards the base and some of the veinlets along the dorsal and discal areas. The wings are deep carmine on the disk back of the dilated area, beyond and apically on the costal field this colour is varied with black, the entire margin from the apex to the anal angle being black-bordered. Antennæ flavous, save the extreme apex, which is infuscated.

Length of body, ♂ 45–50, ♀ 60; of pronotum, ♂ 16–17, ♀ 22; of tegmina, ♂ 38-40, ♀ 40; of hind femora, ♂ 23, ♀ 26 millim.

Hab. MEXICO, Medellin in Vera Cruz (*Heyde, in coll. L. Bruner*), Temax in N. Yucatan (*Gaumer*).

This species has the appearance of living among fallen leaves in the shadows of tropical forests, where its sombre colours would be an excellent protection for it against some of the larger insectivorous birds and various reptiles that are at home in such localities.

10. **Tæniopoda bicristata,** sp. n.

Similar in general appearance to the preceding species, but differing from it in the somewhat smaller size and the slightly narrower pronotum, with a much higher and longer crest, the posterior section of which is higher and longer than the anterior one. The disk is much less flattened and has the hind margin decidedly acute-angled; and, as compared with *T. obscura*, the tegmina and wings are somewhat abbreviated, while the pronotal carinæ are black throughout in *T. bicristata*, as compared with the other species, where they are streaked with flavous or ferruginous.

Length of body, ♀, 54; of pronotum 24, of tegmina 32 millim.

Hab. MEXICO (*coll. L. Bruner*).

The type, a ♀, is marked simply "Mat.," which possibly means Matamoros, Puebla. It was given to the writer some years ago while he was visiting the Mexican National Collections kept at Tacubaya. The insect approaches what I take to be Drury's *T. centurio* in its general structure much more closely than it does *T. obscura*, with which it has been compared, but imitates the latter in colour.

11. **Tæniopoda centurio,** Drury.

Gryllus centurio, Drury, Illustr. Nat. Hist. ii. p. 78, t. 41. fig. 3 (1773) [1].

Locusta (*Rutidoderes*) *centurio*, Westw. in Drury's Illustr. Exot. Ent. 2nd ed. ii. p. 88, t. 41. fig. 3 (1837) [2].

Tæniopoda centurio, Pict. et Sauss. Cat. Acrid. i. p. 18 (1887) [3]; Rehn, Trans. Amer. Ent. Soc. xxix. p. 12 (1902) [4] (in part. ?).

Hab. MEXICO, various localities [4]; HONDURAS [1 2 3]; NICARAGUA (*U.S. Nat. Mus.*: ♂ ♀).

The Mexican and Nicaraguan specimens referred to *T. centurio* seem distinct from all the other species recorded in the present work. Whether or not it is the insect figured by Drury is difficult to state without examining examples from the original locality, Honduras. The Nicaraguan material is more likely to belong to it than that recorded from Mexico, and especially is this likely to be true of such specimens as

come from points somewhat distant from the low country along the Gulf of Mexico. The insect figured as this species on Tab. II. fig. 19 belongs to *T. citricornis*.

12. **Tæniopoda auricornis,** Walker. (Tab. II. figg. 22, 22 *a*, ♂.)

Rhomalea auricornis, Walk. Cat. Dermapt. Salt. Brit. Mus. iii. p. 538 (1870)[1]; Thomas, Acrid. N. Am. p. 241 (1873)[2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 414, fig. 13[3].

Hab. MEXICO, Vera Cruz[1–3] (*H. H. S. & F. D. G.*), Medellin in Vera Cruz (*Rev. T. Heyde*), Oaxaca[1].

The specimens which I refer here are somewhat smaller than the insect which Rehn had before him when he decided as to the one he was willing to accept as Walker's *R. auricornis* (see Proc. Acad. Nat. Sci. Philad. 1904, p. 532). Some of my males do not exceed 30 mm. in length, and they have the posterior extremity of the pronotum rather blunt, almost a right angle. Rehn's examples come from Tamaulipas and may represent still another species.

13. **Tæniopoda varipennis,** Rehn. (*T. flavida*, Tab. II. figg. 20, 20 *a*, ♂.)

Tæniopoda varipennis, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 410–414, figg. 10, 11, 12[1].
Tæniopoda flavida, Bruner, MSS.

Hab. NICARAGUA, Chontales (*Janson*: ♀); COSTA RICA[1], San José (*Underwood, in coll. L. Bruner*: ♂ ♀).

This species is very similar to the preceding, but has the pronotum more elongate and sharply angulate. It seems to be confined to the interior plateau-region. The Chontales specimen referred to above is considerably larger than those of the same sex from San José, Costa Rica; it measures 62 mm. in length and has a pronotum 25 mm. long.

14. **Tæniopoda pulchella,** Bolivar.

Tæniopoda pulchella, Bolivar, Bol. Soc. Esp. Hist. Nat. 1901, pp. 266, 269[1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 414, fig. 14[2]?

Hab. MEXICO[1–2], San Rafael, Vera Cruz (*Townsend*).

The insect which the writer has in mind seems to come nearer Bolivar's description than to any other. The smaller form mentioned by him[1] as being a possible variety of *T. pulchella* may be *T. auricornis*, Walk., as understood by me (see *antèa*). As stated above in connection with remarks on the genus, there are undoubtedly several other forms of *Tæniopoda* that will eventually have to be separated as distinct species.

CHROMACRIS, Walker.

Chromacris, Walker, Cat. Dermapt. Salt. Brit. Mus. iv. p. 643 (1870); Thomas, Acrid. N. Am. p. 167 (1873).

Rhomalea, Burmeister, Handb. Ent. ii. p. 619 (1838) (in part.); Stål, Recens. Orthopt. i. pp. 32, 51 (1873); Syst. Acrid. i. p. 17 (1878).

The locusts constituting the genus *Chromacris* are quite similar in form, but differ considerably one from the other in colour and somewhat in size. There are approximately ten or a dozen species known, four or five of which belong to Mexico or Central America.

Synopsis of the Species of Chromacris.

A[1]. Antennæ with the basal two-fifths flavous, the apical portion black. 1. *colorata,* Serville.

A[2]. Antennæ entirely black.

b[1]. Tegmina with the veins of a purplish tinge. Hind femora provided externally on the basal half with a longitudinal testaceous or yellow fascia in addition to the transverse bands. 2. *miles,* Drury.

b[2]. Tegmina with the veins greenish.

c[1]. Femora banded with yellow.

d[1]. Coloured portion of the wings yellow. Size larger (♂ length 25, ♀ 35 mm.) . . . . . 3. *psittacus,* Gerst.?

d[2]. Coloured portion of the wings vermilion. Size smaller (♂ length 20, ♀ 28 mm.) . . . . . 4. *trogon,* Gerst.

c[1]. Femora without yellow bands. Hind wings with the coloured portion orange . . . . . *trogon,* var., Pict. et Sauss.

1. **Chromacris colorata,** Serville.

Acridium coloratum, Serv. Hist. Orthopt. p. 674 (1839)[1].

Rhomalea colorata, Stål, Recens. Orthopt. i. p. 51 (1873)[2]; Pict. et Sauss. Cat. Acrid. i. pp. 19, 22 (1887)[3].

Chromacris colorata, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 644 (1870)[4]; Rehn, Trans. Amer. Ent. Soc. xxix. p. 12 (1902)[5].

Romalea pedes, Sauss. Rev. et Mag. Zool. xi. p. 392 (1869)[6].

Rhomalea pedes, Thomas, Acrid. N. Am. p. 240 (1873)[7].

Hab. NORTH AMERICA, South Carolina and Texas[1–4].—MEXICO, Tepic (*coll. Calif. Acad. Sciences*), Cuernavaca, Morelos (*O. W. Barrett*), Orizaba, Vera Cruz (*H. H. S. & F. D. G.*), Temax, N. Yucatan (*Gaumer*); CENTRAL AMERICA.

Next to *C. miles,* this species is probably the most widely distributed member of the genus, as it occurs from the Carolinas to Central America and from the Atlantic to the Pacific.

2. **Chromacris miles,** Drury.

Gryllus miles, Drury, Illustr. Nat. Hist. ii. t. 42. fig. 2 (♀) (1773) [1].
Locusta (*Rutidoderes*) *miles,* Westw. in Drury's Illustr. Exot. Ent. ii. p. 89, t. 42. fig. 2 (♂) (1837) [2].
Rhomalea miles, Pict. et Sauss. Cat. Acrid. i. pp. 19, 20 (1887) [3].
Gryllus speciosus, Thunb. Mém. Acad. St. Pétersb. ix. p. 404, t. 14. fig. 1 (1824) [4].
Acridium speciosum, Serv. Hist. Orthopt. p. 673 (♀) (1839) [5].
Rhomalea speciosa, Stål, Recens. Orthopt. i. p. 51 (1873) [6]; Bolivar, Viaje al Pacifico, Orthopt. pp. 34, 35 (1884) [7].
Acridium xanthopterum, Hahn, Orthopt. t. A. fig. 2 (1835) [8].

Hab. CENTRAL AMERICA, Bay of Honduras [1 2 3].—SOUTH AMERICA [1–8], Trinidad (*coll. L. Bruner*).

A common species in Venezuela and Colombia, and doubtless penetrates northward along the Isthmus to Southern Costa Rica.

3. **Chromacris psittacus,** Gerstaecker?

Romalea psittacus, Gerst. Stett. ent. Zeit. xxxiv. pp. 185, 186 (1873) [1].
Rhomalea psittacus, Pict. et Sauss. Cat. Acrid. i. p. 24 (1887) [2].

Hab. NICARAGUA, Chontales (*Janson*: ♂); COSTA RICA, Siquires (*M. A. Carriker, in coll. L. Bruner*).—COLOMBIA, Bogota [1].

The insect referred to this species agrees well with Gerstaecker's description, as well as with a specimen from Bogota in my collection, only the coloured portion of the wings is clear yellow, instead of vermilion. The Chontales male is discoloured by immersion in alcohol, but it seems to belong here.

4. **Chromacris trogon,** Gerstaecker.

Romalea trogon, Gerst. Stett. ent. Zeit. xxxiv. p. 186 (1873) [1].
Rhomalea trogon, Pict. et Sauss. Cat. Acrid. i. pp. 20, 23 (1887) [2].
Chromacris trogon, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 414 [3].

Hab. BRITISH HONDURAS, Rio Sarstoon (*Blancaneaux*: ♀); COSTA RICA [1]; PANAMA, Volcan de Chiriqui (*Champion*).

The first reference is to an insect with banded legs and of the size of the varietal form, which has the wings orange-coloured.

Var.

Rhomalea trogon, var., Pict. et Sauss. Cat. Acrid. i. p. 24 (1887) [4].

Hab. COSTA RICA, Pozo Azul (*M. A. Carriker*).

The specimens from Pozo Azul agree exactly with the dimensions as given by Pictet and Saussure in their 'Catalogue d'Acridiens.' Whether or not they are sufficiently distinct from typical *trogon* to deserve a name I am unable to state till further material is available for examination.

TROPIDACRIS, Scudder.

Tropidacris, Scudder, Proc. Bost. Soc. Nat. Hist. xii. p. 346 (1869); Stål, Recens. Orthopt. i. p. 31 (1873); Syst. Acrid. i. p. 18 (1878); Pict. et Sauss. Cat. Acridiens, i. p. 28 (1887).

The present genus contains our largest locusts and is represented by about half a dozen species which are distributed over both North and South America between the 30th degree of north and south latitude. All of them probably reach the territory under investigation. They have been carefully studied by Professor Pictet and Dr. Saussure, to whose work the reader is referred for a synopsis of the species, together with their synonomy.

1. **Tropidacris dux,** Drury. (Tab. III. figg. 8, 8 *a*.)

Gryllus (*Locusta*) *dux*, Drury, Illustr. Nat. Hist. ii. t. 44 (1773) [1].
Acridium dux, Oliv. Encycl. Méth. vii. p. 215, t. 126. fig. 1 (1791) [2].
Locusta (*Rutioderes*) *dux*, Westw. in Drury's Illustr. Exot. Ent. ii. p. 92, t. 44 (1837) [3].
Locusta dux, Duncan, Introd. Ent. p. 257, t. 15. fig. 2 (1840) [4].
Tropidacris dux, Scudd. Proc. Bost. Soc. Nat. Hist. xii. (1869) [5]; Pict. et Sauss. Cat. Acrid. i. pp. 29, 30 (1887) [6].
Acridium latreillei, Perty, Del. Anim. Artic. p. 123, t. 24. fig. 4 (1834) [7].
Gryllus cristata, Thunb. (nec Linn.), Mém. Acad. St. Pétersb. v. p. 224 (1815) [8].

Hab. North America, Texas (*Scudder*).—Mexico; Central America, Bay of Honduras [1]; Costa Rica (*Underwood*); Panama, Chiriqui (*Ribbe*).—South America to Brazil [7].

One of these large locusts was seen in the neighbourhood of Omaha, Nebraska, during the summer of 1872 or 1873, but it was too wild to be captured, although several hours were spent in an effort to take it.

2. **Tropidacris cardinalis,** Pictet et Saussure. (Tab. III. fig. 10.)

Tropidacris cardinalis, Pict. et Sauss. Cat. Acrid. i. pp. 30, 31 (1887) [1].

Hab. Mexico, Medellin, Vera Cruz (*Rev. T. Heyde*), Temax, N. Yucatan (*Gaumer*); Guatemala [1].

This species is markedly smaller than the preceding, and seems to be distributed about the western and south-western coast of the Gulf of Mexico.

3. **Tropidacris imperialis,** Pictet et Saussure. (Tab. III. fig. 9.)

Tropidacris imperialis, Pict. et Sauss. Cat. Acrid. i. p. 31 (1887) [1].

Hab. Guatemala [1], San Gerónimo (*Champion*: ♀).

As suggested by Pictet and Saussure, this insect is probably a variety of the preceding, but seems to be sufficiently different to have a name of its own.

4. **Tropidacris grandis,** Thunberg.

Gryllus grandis, Thunb. Mém. Acad. St. Pétersb. ix. p. 403 (1824) [1].
Acridium dux, Brullé, Hist. Nat. Ins. ix. p. 225 (1835) [2]; Serv. Hist. Orthopt. p. 653 (1838) [3].
Tropidacris grandis, Stål, Recens. Orthopt. i. p. 49 (1873) [4].
Tropidacris fabricii, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 349 (1869) [5].

Hab. TROPICAL AMERICA [1–5].

5. **Tropidacris cristata,** Linn.

Gryllus (*Locusta*) *cristatus,* Linn. Syst. Nat. ii. p. 431 (1758) [1]. For further synonymy, see Pict. et Sauss. Cat. Acridiens, p. 32.

Hab. SOUTH AMERICA [1], Colombia [1] to Argentina.

This and the preceding species doubtless extend northward into Central-American territory. *T. cristata* is very common in Colombia, as well as further to the southward. It is reported that this species, which is called the "*langosta negra,*" occasionally travels in swarms in the western portion of Argentina. Several specimens from such a swarm that visited Catamarca are in the present writer's collection. A variation of the species with much paler wings occurs in Southern Brazil.

TITANACRIS, Scudder.

Titanacris, Scudder, Proc. Bost. Soc. Nat. Hist. xii. p. 352 (1869); Stål, Recens. Orthopt. i. p. 50 (1873); Syst. Acrid. i. p. 18 (1878); Pict. et Sauss. Cat. Acridiens, i. p. 32 (1887).
Lophacris, Scudder, loc. cit. p. 353 (1869).

These large, green, lobe-crested locusts, with beautifully and highly-coloured hind wings, are much more restricted in their distribution than are the members of the preceding genus. While about the same number of species are known, but two seem to enter Central-American territory.

1. **Titanacris velasquezi,** Nieto. (Tab. III. figg. 7, 7 *a.*)

Acridium velasquezii, Nieto, Rev. et Mag. Zool. 1857, p. 360, t. 12 [1].
Lophacris velasquezii, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 354 (1869) [2].
Acridium olfersii, Sauss. Rev. et Mag. Zool. 1861, p. 162 [3].

Hab. MEXICO [3], Potrero and San Francisco, Vera Cruz [1]; BRITISH HONDURAS, Belize (*Blancaneaux*: ♀); PANAMA (*U.S. Nat. Mus.*: ♀).

2. **Titanacris carinata,** Stoll.

Gryllus carinatus, Stoll, Représ. Sauter. etc. p. 12, t. 5. fig. 16 (1773) [1].
Acridium albipes, Burm. Handb. Ent. ii. p. 628 (1838) [2]; de Haan, Bijdr. tot Kenn. Orthopt. p. 151 (1842) [3].
Titanacris carinata, Scudd. Proc. Bost. Soc. Nat. Hist. xii. p. 352 (1869) [4].

Hab. TROPICAL AMERICA [1–4]; WEST INDIES [1].

No specimens of the present species are at hand. It probably reaches the southern portions of Central America.

PRIONACRIS, Stål.

Prionacris, Stål, Syst. Acrid. i. pp. 19, 55 (1878); Pict. et Sauss. Cat. Acridiens, i. p. 35 (1887).

This is still another genus of the large, lobe-crested locusts of Tropical America that should be included in a treatise of the Orthopterous insects belonging to Central America. Only a single species is known.

1. **Prionacris compressa,** Stål.

Prionacris compressa, Stål, Syst. Acrid. i. p. 55 (1878) [1]; Pict. et Sauss. Cat. Acrid. i. p. 35 (1887) [2].

Hab. South America, Colombia [1 2].

Neither specimens nor records are at hand to indicate the presence of *P. compressa* in Central America, yet, in my judgment, it should be included in the locust-fauna of that country.

[NICHELIUS, Bolivar.

Nichelius, Bolivar, Mém. Soc. Zool. France, i. p. 144 (1888); Orthopt. Cuba, p. 29 (1888); Gundlach, Ent. Cuba, ii. pp. 343, 344 (1890).

This genus seems to be confined to the island of Cuba; nevertheless it requires notice here.

1. **Nichelius fuscopictus,** Bolivar.

Nichelius fuscopictus, Bolivar, Mém. Soc. Zool. Fr. i. pp. 144, 145 (1888) [1]; Orthopt. Cuba, pp. 30, 31 (1888) [2]; Gundl. Ent. Cuba, ii. pp. 343, 344 (1900) [3].

Hab. West Indies, Cuba [1–3].

This insect has not been seen by me.]

NAUTIA, Stål.

Nautia, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. p. 42 (1878); Syst. Acrid. i. p. 42 (1878); Gig.-Tos, Boll. Mus. Zool. Torino, xiii. no. 311, p. 43 (1898).

Œdalometopon, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 418.

The various species of *Nautia* are of moderate size and olive-green in colour, with the face, occiput, pronotum, and tegmina variously lined or marked with yellow and brown. They live among the herbage and small shrubs growing in openings or clearings at the margins of the forests of Tropical America, and are either rare or else sufficiently active and alert to keep out of the collector's reach. The following brief table will aid in separating the species so far as known to the writer.

Synopsis of the Species of Nautia.

A. Pronotum plainly divergent posteriorly, the transverse sulci deeply impressed and the hind margin plainly but very obtusely angulate. Antennæ with the basal joints depressed, subensiform *. Pronotum quadrifasciate with flavous. [Central America.]

b. Larger (♀, length 31 mm.) . . . . . 1. *flavosignata*, Stål.

bb. Smaller (♀, length 27 mm.). Serrations and tubercles of the pagina black. [Costa Rica and northward.]

c. Tegmina and wings apparently as long as the abdomen . . . . 2. *petasata*, Rehn.

cc. Tegmina and wings abbreviate, not more than one-half the length of the abdomen . . . . . 3. *conspersipes*, sp. n.

AA. Pronotum subcylindrical, the transverse sulci less strongly impressed, the hind margin broadly rounded. Antennæ either filiform or subensiform. Pronotum bifasciate with flavous. [British Guiana.]

b. Hind femora comparatively slender, the pagina closely serrato-dentate. Hind tibiæ reddish. Sides of face and cheeks below the eyes flavo-vittate . . . . . [4. *vitta-genæ*, sp. n.]

bb. Hind femora rather robust, the paginæ few and smooth, the upper and lower edges of the outer disk marked with conspicuous blood-red patches; the genicular area black, with the exception of the lobes, which are ivory-white. Hind tibiæ olivaceous basally, infuscated apically, the knees black . . . . . [5. *ornatipes*, sp. n.]

1. **Nautia flavosignata,** Stål.

Nautia flavosignata, Stål, Syst. Acrid. i. p. 87 (1878)[1].

Hab. Panama[1].

This insect is not known to the present writer. It in all probability extends farther northward than its given habitat.

2. **Nautia petasata,** Rehn.

Œdalometopon petasatum, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 418–420, figs. 19, 20[1].

Hab. Costa Rica[1], Carrillo.

A specimen, possibly of this species, was seen by me during the month of March at Juan Viñas, Costa Rica, but was not taken. It was resting upon the stem of a climbing plant at the edge of a jungle and before it could be secured succeeded in getting away among the almost impenetrable tangle of vines and other vegetation.

* This character is somewhat uncertain so far as *N. flavosignata* and *N. petasata* are concerned, since both Stål's and Rehn's types lacked antennæ.

3. **Nautia conspersipes,** sp. n.

As indicated by the synoptic table, this insect is most nearly related to *N. petasata*, Rehn, which comes from an adjacent locality. It also comes close to *N. flavosignata*, Stål, from further south. Its general structure is robust, somewhat fusiform ; the tegmina are abbreviated, tapering, and one-half the length of the abdomen, their apex rounded.

Front, cheeks, occiput, pronotum, and pleura coarsely and profoundly punctulate. Vertex very narrow, not more than one-third as wide as the diameter of the first antennal joint; fastigium horizontal, but considerably depressed below the plane of the occiput, sulcate. Frontal costa prominent between the antennæ, plain above, sulcate below, scarcely reaching the ocellus. Antennæ heavy, subensiform, the basal joints strongly depressed, as long as the head, pronotum, and tegmina together. Pronotum rather strongly divergent posteriorly; the hind extremity subangulate, its middle slightly notched; in front roundly advanced upon the occiput and with the median portion roundly emarginate. Tegmina tapering, with their dorsal edges overlapping. Hind femora robust, nearly one-third as wide as long, strongly serrate and tuberculate, the genicular area about one-fifth of the entire length; the tibiæ considerably shorter than the femora, the tarsi more than half as long as the tibiæ, the first and second joints about equal in length. Prosternal spine blunt, quadrate at base, somewhat transverse. Valves of the ovipositor straight, the upper pair much heavier and longer than the lower pair, their superior edge flattened and with the external margin sharp and faintly crenulate.

General colour brownish, with an olivaceous tinge to the head, abdomen, and legs, the latter somewhat paler than the rest of the insect. Pronotum quadrifasciate with flavous, the disc of the tegmina similarly coloured to their apices. Hind femora with all the serrations and tubercles black-tipped, the lunules of the genicular portion also strongly blackened. Hind tibiæ 8-spined both externally and internally, the spines black-tipped.

Length of body, ♀, 26·5; of pronotum 6·2, of tegmina 9, of hind femora 15, of antennæ 17·5 millim.

Hab. NICARAGUA, Chontales (*coll. S. H. Scudder*).

OPHTHALMOLAMPIS, Saussure.

Ophthalmolampis, Saussure, Rev. et Mag. Zool. 1859, p. 394; Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 42 (1887); Syst. Acrid. i. p. 42 (1837).
Tæniophora, Stål, Recens. Orthopt. i. pp. 34, 54 (1873) (in part.).

Although the present genus has been recorded as belonging to Tropical America, none of the species have been referred to, or collected in, regions embraced in the present treatise. Since two or three species have been taken in countries of northern South America, one or more of the forms are liable to occur in Central America in the vicinity of Panama.

TÆNIOPHORA, Stål.

Tæniophora, Stål, Recens. Orthopt. i. pp. 34, 53 (1873); Syst. Acrid. p. 42 (1878).

The genus *Tæniophora* includes several species of highly-coloured locusts that are below the medium in size. They are distributed over northern South America and the lower portions of Central America, with Panama at about the centre of such distribution. The known forms, together with two additional species, are tabulated in the subjoined key.

Synopsis of the Species of Tæniophora.

A. Male cerci somewhat heavy, flattened, and with the apex truncate.
b. Prevailing colour olive-green or olive-yellow.
c. Olivaceous-green. Anterior femora armed with a median tooth. Genicular portion of hind femora black . . . . . 1. *dentipes,* Stål.
cc. Dull olivaceous-yellow. Anterior femora not dentate. Anterior trochanters and base of all the femora dilute sanguineous.
d. Apex of hind femora and base and apical half of hind tibiæ black . . . . . 2. *pulchripes,* Stål.
dd. Apex of hind femora and base of hind tibiæ dull ferruginous, the apical two-thirds of the latter black . . . . . 3. *femorata,* sp. n.
bb. Prevailing colour black or piceous.
c. Hind femora with a preapical pale annulus, the apex sanguineous. Pronotum and tegmina vittate . . . . . [4. *carinipes,* Gerst.]
cc. Hind femora without a preapical pale annulus, the apex fuscous. Pronotum not vittate . . . . . 5. *megacephala,* sp. n.
AA. Male cerci long and slender, the apex acuminate. Hind femora at base olivaceous, outer half ferruginous, the genicular area black. Head, pronotum, and tegmina vittate . . . . . [6. *unistrigata,* de Haan.]

1. **Tæniophora dentipes,** Stål.

Tæniophora dentipes, Stål, Obs. Orthopt. i. p. 53 (1873) [1].

Hab. COLOMBIA, Remedios [1].

This locust is certain to be found in Panama, and the same remark applies to the following species.

2. **Tæniophora pulchripes,** Stål.

Tæniophora pulchripes, Stål, Syst. Acrid. i. p. 88 (1878) [1].

Hab. COLOMBIA, Santa Marta [1].

3. **Tæniophora femorata,** sp. n.

Similar to *T. dentipes,* Stål, but lacking the dentition of the anterior femora above. Head, pronotum, and tegmina vittate with shiny black and pale olivaceous. The hind femora blood-red varied with black and olivaceous. Front and middle legs olivaceous.

Head large, considerably broader than the front edge of the pronotum, the eyes large and very prominent, not much longer than wide, fully twice as long as the cheeks below them, separated above by a very narrow almost linear vertex; the fastigium short, depressed, scarcely sulcate; frontal costa rather broad, nearly twice as wide as the diameter of the first antennal joint, prominent between the antennæ, not sulcate, and provided with but a very few inconspicuous punctulations. Antennæ very long and slender, in the male nearly or quite the length of the insect, in the female about one-fifth shorter. Pronotum short, smooth, the transverse sulci profound, continuous (♀) or gently interrupted in the middle (♂); hind lobe somewhat punctulate, considerably shorter than the anterior lobe; front edge sinuate, the hind margin obtusangulate. Tegmina burnished, two-thirds the length of the abdomen. Hind femora very robust and long, extending considerably beyond the tip of the abdomen, the genicular lobes sinuate on

their lower edge and terminating in an acute apex. Hind tibiæ and tarsi hirsute, the former eight-spined on both margins, the latter with the joints successively longer. Prosternal spine robust at base, terminating in a short acuminate nipple. Cerci of male robust, the sides nearly parallel, a little longer than broad, the apex sinuately truncate. Valves of the ovipositor short, the apex profoundly hooked and the outer edges of the upper pair strongly crenulate.

Colour of the anterior and middle legs, together with the abdomen, dark olivaceous; face and lower border of cheeks black; antennæ with the basal joints pale, gradually darkening towards the middle, where they are black, the two apical joints testaceous. Occiput in middle black, at sides pale olivaceous. Pronotum in the middle of the disk, and on the lower edge, as well as on the upper portion of the sides, longitudinally vittate with shiny black and pale olivaceous, the pale vittæ placed on the middle of the sides and at the outer border of the disk, there being four of the latter and five of the former, all of which continue upon the tegmina. Hind femora strongly tinged with red on the basal two-thirds and dimly bifasciate with black, beyond annulate with flavous in advance of the ferruginous genicular area; the tibiæ olivaceous basally, strongly infuscated on the apical two-thirds, the tarsi dark olivaceous. Labrum and region about the base of the middle coxæ ferruginous.

Length of body, ♂ 16, ♀ 17; of pronotum, ♂ 3, ♀ 3·35; of tegmina, ♂ ♀, 7–7·5; of hind femora, ♂ 10·5, ♀ 11·75; of antennæ, ♂ 15·5, ♀ 13 millim.

Hab. Costa Rica, Pozo Azul (*M. A. Carriker*).

The most characteristic feature of *T. femorata* is its very large, robust, reddish hind femora.

[4. **Tæniophora carinipes**, Gerstaecker.

Ommatolampis carinipes, Gerst. Stett. ent. Zeit. xxxiv. pp. 195, 196 (1873) [1].

Tæniophora carinipes, Stål, Syst. Acrid. i. p. 88 (1878) [2].

Hab. Colombia, Bogotá [1].

It is quite possible that this species is also to be met with in the southern part of Costa Rica, Chiriqui, or Panama.]

5. **Tæniophora megacephala**, sp. n.

As indicated by the synoptic table, the present insect is most closely related to the preceding species, from which it differs in the absence of pale vittæ on the head, pronotum, and tegmina. It also lacks the præapical pale annulus of that species, and has the genicular region of the hind femora black instead of sanguineous. The whole insect is strongly tinged with smoky brown and piceous.

Head unusually large, the occiput swollen and greatly elevated above the plane of the pronotum; the eyes fairly prominent and separated above at the vertex by a space fully as broad as the diameter of the rather large basal joint of one of the antennæ; the front sparsely, coarsely punctate. Occiput and pronotum also coarsely and profoundly punctate; the latter with the front edge strongly and widely bordered or margined, the hind margin of the disk very broadly angulate. Tegmina about two-thirds as long as the abdomen, their apex rounded, the discal area paler than the remaining portion, which is dark piceous. Hind femora slender, without bands, but somewhat paler basally; the tibiæ and anterior and middle legs piceous, as is also much of the face and pectus.

Abdomen testaceous, showing traces of smoky brown. Valves of ovipositor as described for *T. femorata*.

Length of body, ♀, 16; of pronotum 3·35, of tegmina 7·5, of hind femora 10 millim.

Hab. Panama (*coll. S. H. Scudder*).

The single specimen examined has the antennæ broken off. It differs from *T. femorata* and the other described species by the decidedly wider vertex.

[6. **Tæniophora unistrigata,** De Haan.

Acridium (*Oxya*) *unistrigatum*, de Haan, Bijdr. tot Kenn. Orthopt. p. 158, t. 21. figg. 7 (♂), 8 (♀) (1842) [1]; Stål, Obs. Orthopt. i. p. 53 (1873) [2].

Hab. Tropical America.

De Haan gives New Guinea as the habitat of this insect, but this is certainly an error. It undoubtedly is at home in some portion of Central or South America.]

MEZENTIA, Stål.

Mezentia, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, pp. 43, 88 (1878); Giglio-Tos, Boll. Mus. Zool. Torino, xiii. no. 311, p. 43 (1898).

The genus *Mezentia* is known only by a single species which comes from Panama. It is not represented in the collections studied.

1. **Mezentia gibbera,** Stål.

Mezentia gibbera, Stål, Syst. Acrid. i. p. 88 (1878) [1].

Hab. Panama [1].

HISYCHIUS, Stål.

Hisychius, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, pp. 44, 89 (1887); Giglio-Tos, Boll. Mus. Zool. Torino, xiii. no. 311, pp. 43, 52 (1898).

Hisychius is another tropical genus that reaches the borders, at least, of the territory covered by the present treatise. It is represented by several species, only one of which will be mentioned.

1. **Hisychius festæ,** Giglio-Tos.

Hisychius festæ, Gigl.-Tos, Boll. Mus. Zool. Torino, xii. no. 301, p. 3 (1897) [1]; xiii. no. 311, p. 52 (1898) [2].

Hab. Panama, Darien [1–2].

This insect is not contained in the collections studied by me.

RHICNODERMA, Gerstaecker.

Rhicnoderma, Gerst. Mittheil. naturwiss. Ver. Neu-Vorpomm. und Rügen, xx. p. 20 (1889).

The genus *Rhicnoderma*, which is composed of oddly-formed, apterous, olivaceous locusts, seems to be confined to the northern half of Tropical America, where it is represented by at least four, or possibly five, distinct species. Judging from their slightly hollowed sternum, it is safe to say that these insects live for the most part upon the smaller branches of shrubs and trees, to which they cling tenaciously. The annexed table will aid the student in separating them.

Synopsis of the Species of Rhicnoderma.

A. Larger (♀, length 40–50 mm.).
  b. Body everywhere strongly punctured, the surface dull or sub-shining. Median carina of pronotum conspicuous.
    c. First abdominal segment concolorous with the rest. Hind tibiæ ferruginous, the genicular area of the femora olive-brown . . . . 1. *olivacea*, Gerst.
    cc. First abdominal segment testaceous. Hind tibiæ dark brown, the genicular area of the femora black . . . . . 2. *basalis*, sp. n.
  bb. Body less strongly punctured, the surface decidedly glabrous. Median carina of the pronotum nearly or quite obliterated.
    c. Pronotum furnished with but two continuous transverse sulci. Hind femora without black markings. The hind tibiæ pale, internally tinged with dull orange, their tarsi concolorous . . . . . 3. *glabra*, sp. n.
    cc. Pronotum provided with three continuous transverse sulci. Hind femora with their genicular portion strongly marked with black. The hind tibiæ internally and apically black, externally vinaceous, their tarsi crimson . . . . . 4. *pugnax*, sp. n.
AA. Smaller (♀, length 32 mm.) . . . . . 5. *humilis*, Rehn.

1. **Rhicnoderma olivacea**, Gerstaecker.

Rhicnoderma olivacea, Gerst. Mittheil. naturwiss. Ver. Neu-Vorpomm. und Rügen, xx. p. 20 (1888)[1].

Hab. PANAMA, Chiriqui[1].

This insect, which may be considered the type of the genus, has not been seen by me. It is quite evident that the different species are rather local in their distribution, or else the forms tabulated above are representatives of a very variable single species which enjoys a wide range over tropical portions of northern South America, Central America, and Southern Mexico.

2. **Rhicnoderma basalis**, sp. n.

As indicated in the synoptic table of the species, the present form is most nearly related to *R. olivacea*, from which it differs by its pale first abdominal segment, the complete absence of glossiness upon the head and thorax, and by its brownish (instead of greenish) general colour. The vertex and borders of the eyes are entirely punctate, instead of containing spaces which are smooth. As compared with *T. humilis*, the eyes are smaller and the lower portion of the face longer and broader, the vertex is without the V-shaped carinæ that meet in the centre of the upper edge of the frontal costa, while the lateral foveolæ above the antennæ are quadrate and unusually deep. The frontal costa is both profoundly sulcate and deeply and closely punctulate, and provided a little below its middle with a prominent transverse carina that separates it into two compartments; at the transverse groove of the face the costa suddenly narrows to less than one-half of its width above, gradually diminishes in height and depth of sulcation, and continues to the base of the clypeus. The latter is short and strongly wrinkled and punctured. The labium and mandibles are large and prominent. The pronotum is transverse, very strongly and closely punctate, the transverse sulci fairly impressed; the median carina is distinct but severed by all four of the sulci. The metathoracic segment is much shorter at its sides than above, while its middle is rather deeply and broadly

emarginate. The abdominal segments are less closely and profoundly punctate. Valves of the ovipositor short, blunt, and obtected by the prominent supra-anal plate, which in this species is gently depressed and broadly rounded at the tip. Prosternal spine rather smaller, the apex a little arcuate and gently hollowed in the centre. Hind femora fusiform, the paginæ prominent; tibiæ bowed, provided internally with ten, and externally with eight spines.

General colour dark brownish-olive, the basal abdominal segment above pale testaceous; base of second and sutures of all the abdominal segments, knees of hind femora, and hind tibiæ infuscated. Antennæ black.

Length of body, ♀, 47; of pronotum 6·75, of hind femora 20 millim.

Hab. MEXICO (*coll. S. H. Scudder*).

The single female specimen, the type, simply bears the label "Palmer's assorting, No. 1155." Other numbers of his assorting, ranging from 1148 to 1166, refer to Yucatan, Isthmus of Tehuantepec, and neighbouring localities. It is probable, therefore, that this insect comes from the vicinity of the boundary of Mexico and Central America.

3. **Rhicnoderma glabra,** sp. n.

About the size of the preceding species or a trifle larger, but differing from it in the less strongly punctured surface of the head and thorax, and in having the entire body decidedly glabrous, while the colour of the head, body, and two anterior pairs of legs is almost uniformly brownish-olive.

Vertex about one-half broader than the longest diameter of one of the eyes, the fastigium flattened and strongly punctate, not at all sulcate, not separated from the frontal costa by a pair of oblique carinæ as illustrated for Rehn's *R. humilis* (see Proc. Acad. Nat. Sci. Philad. 1905, p. 415, fig. 16); the frontal costa sulcate only below the transverse ridge immediately above the ocellus, and then only gently. Pronotum short, nearly twice as broad as long, with scarcely any trace of the median carina; the anterior margin gently sinuate, the posterior margin straight, the transverse sulci inconspicuous, two in number above, three at sides. Dorsum of metathorax scarcely emarginate at middle. Abdomen faintly carinated above; the supra-anal plate with its apex broadly rounded, the portion beyond the transverse sulcus as long as broad at base, not sulcate. Valves of the ovipositor a little longer than in the preceding species, their apices less strongly hooked. Hind femora moderately slender and elongate, their superior carinæ strongly serrate; the tibiæ hirsute, heavy, seven-spined externally, ten- or eleven-spined internally, the first and second tarsal joints about equal in length. Prosternal spine conspicuous, transverse, its anterior margin raised and forming a prominent straight ridge.

Hind femora apple-green, the lunules of the knees ferruginous; hind tibiæ externally testaceous, internally pale orange-yellow. Antennæ black. The depression at the junction of first and second abdominal segments dark piceous; the others brownish.

Length of body, ♀, 50; of pronotum 5·85, of hind femora 21 millim.

Hab. COSTA RICA, Pozo Azul (*Underwood and Carriker, Jr., in coll. L. Bruner*).

Two females. These specimens are readily separable from *R. basalis* by their glabrous appearance and uniformly brownish-olive colour, as well as by the character of the transverse sulci of the pronotum.

4. **Rhicnoderma pugnax,** sp. n.

As indicated by the synoptic table, the present species is rather closely related to *R. glabra*, from which it differs by having three continuous transverse sulci on the pronotum, instead of only two with a slightly interrupted additional one near the front margin. It also differs from that species in having the lower posterior angle of the first abdominal segment, as well as the suture between the first and second

segments, dark piceous, while the hind tibiæ are infuscated internally and vinaceous externally and the tarsi are coral-red. The structure of the vertex is somewhat similar to that of *R. humilis*, Rehn, and rather free from punctation. The antennæ are slender, brownish, terminating in a pale testaceous tip, which includes four or five joints.

The insect has a rather prominent border to the hind margin of each eye, as well as the external lunule and the entire inner side of the apex of the hind femora, black. Prosternal spine narrow, but its apex provided with the usual raised transverse carina. Last ventral segment of ♂ abdomen elongate prow-shaped, the apex gently rounded.

Length of body, ♂, 32; of pronotum 4·25, of hind femora 15 millim.

Hab. MEXICO, Vera Cruz (*Rev. T. Heyde, in coll. L. Bruner*).

5. **Rhicnoderma humilis,** Rehn.

Rhicnoderma humile, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 415–417 [1].

Hab. COSTA RICA, Tarbaca [1].

DICÆARCHUS, Stål.

Dicæarchus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, pp. 44, 89 (1878); Syst. Acrid. i. pp. 44, 89 (1878).

According to Stål (*loc. cit.* p. 90), the insect which is the type of the genus *Dicæarchus* bears a general resemblance to *Agesander ruficornis.*

1. **Dicæarchus cribellatus,** Stål.

Dicæarchus cribellatus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, pp. 89, 90 (1878)[1]; Syst. Acrid. i. pp. 89, 90 (1878) [2].

Hab. COLOMBIA [1 2].

While no records or specimens are at hand to indicate that this locust occurs within territory under investigation, there can be scarcely any doubt but that it belongs to the Central-American fauna.

BACTROPHORA, Westwood.

Bactrophora, Westwood, Arcana Ent. i. p. 66 (1845).
Scolocephalus, Bruner, Insect Life, xvi. p. 314 (1905).

The insect upon which the present genus is based was from an unknown locality, and was figured on the same plate with a Sierra Leone plant. Its actual occurrence in Costa Rica, however, will now definitely establish its habitat. The structure is so abnormal that the exact location of the genus is a little doubtful. The only species appears to be the one described by Westwood and again by the present writer.

1. **Bactrophora dominans,** Westwood.

Bactrophora dominans, Westw. Arcana Ent. i. p. 66, t. 17. fig. 2 (♀) (1845) [1].
Scolocephalus mirabilis, Bruner, Ins. Life, xvi. pp. 314, 315, t. 11 (♂) (1905) [2].

Hab. COSTA RICA, Pozo Azul (*Underwood, in coll. L. Bruner*: ♂).

It is possible that the insect from which Westwood's drawing was made is still extant, but there is scarcely any doubt but that the two insects here mentioned are the sexes of the same species. The Costa Rican male was taken in June.

[TRYBLIOPHORUS, Serville.

Trybliophorus, Serville, Rev. Méth., Orthopt. p. 83 (1831); Hist. Orthopt. p. 631 (1839); Stål, Syst. Acrid. i. p. 43 (1878); Giglio-Tos, Boll. Mus. Zool. Torino, xiii. no. 311, p. 43 (1898).
Stegastris, Gerstaecker, Mittheil. naturwiss. Ver. Neu-Vorpomm. und Rügen, xx. p. 21 (1889); Brunner, Rev. Syst. Orthopt. p. 136 (1893).

While none of the representatives of the genus *Trybliophorus* are among the material at hand, it is quite possible that at least one species will later be found to reach Central America.

1. **Trybliophorus octomaculatus,** Serville.

Trybliophorus octomaculatus, Serv. Rev. Méth., Orthopt. p. 83 (1831)[1]; Hist. Orthopt. p. 632 (1839)[2].

Hab. South America, Cayenne[1 2].]

[JIVARUS, Giglio-Tos.

Jivarus, Giglio-Tos, Boll. Mus. Zool. Torino, xiii. no. 311, p. 54 (1898).

The genus *Jivarus* also probably reaches our territory in at least a single species. Although Ecuador seems to be the middle of the distribution of the few forms belonging to it, the individuals are numerous and generally distributed both in low and high altitudes.

For a reference to these insects, see Giglio-Tos (*loc. cit.*).]

LEGUA, Walker *.

Legua, Walker, Cat. Dermapt. Salt. Brit. Mus. iii. p. 502 (1870).
Prorachthes, Gerstaecker, Mittheil. naturwiss. Ver. Neu-Verpomm. und Rügen, xx. p. 38 (1889).

Legua is a genus that contains at least two species of remarkable locusts of rather large size and showy colours. They occur in Tropical America, where they seem to be rare, though widely disseminated. Only a single species is found in Central America, as shown by the material studied. Gerstaecker's type of *Prorachthes insignis* was from the Amazons.

1. **Legua crenulata,** Stoll.

Gryllus (*Locusta*) *crenulatus*, Stoll, Représ. Saut. etc. t. 6 *b*. fig. 18 (1787)[1].
Mesops crenulatus, Burm. Handb. Ent. ii. p. 610 (1839)[2].

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* = *Prorachthes* of the synopsis of the genera, *anteà* p. 212.

Acridium (*Opsomala*) *stollii*, Haan, Verh. Nat. Gesch. nederl. Ind. Bezitt., Ins. p. 148 (1844) [3].
? *Legua crenulata*, Walk. Cat. Dermapt. Salt. Brit. Mus. iii. p. 503 (1870) [4].

Hab. Costa Rica, Port Limon (*M. A. Carriker, Jun.*), San Carlos (*Biolley*).

Two females from Costa Rica are in the present writer's collection. Probably all of the African records are due to Stoll wrongfully assigning *L. crenulata* to that country, and the later writers copying his locality.

Walker described the antennæ as "slender, setaceous," whereas they are dagger-shaped, or at least the basal joints are strongly flattened.

CYLINDROTETTIX, Bruner.

Cylindrotettix, Bruner, Journ. N. Y. Ent. Soc. xiv. p. 153 (1906).

In a general way the members of the present genus are closely related to *Leptysma*, Stål. The main difference is in the absence of a definite median longitudinal sulcus on the fastigium of the vertex. Only a single species seems to be represented.

1. **Cylindrotettix insularis**, Bruner.

Cylindrotettix insularis, Bruner, Journ. N. Y. Ent. Soc. xiv. p. 153 [1].

Hab. Honduras (*coll. Carnegie Museum*); Costa Rica, San Mateo (*Biolley, in coll. L. Bruner*).—Trinidad [1].

No males of this genus have been examined. The Honduras and Costa Rican specimens do not differ sufficiently, perhaps, from those coming from Trinidad to warrant their separation, still it is just possible that they represent a distinct species, with a slight trace of a fastigial groove and one in which the discal area of the tegmina is provided with but a single irregular longitudinal vein, instead of with two intercalaries. The first character brings it very close to the typical *Leptysmæ*. The name *C. herbaceus* is suggested for this Central-American insect.

LEPTYSMA, Stål.

Leptysma, Stål, Recens. Orthopt. i. pp. 42, 85 (1873); Syst. Acrid. i. p. 4 (1878).
Opsomala, Serv. (in part.).

With the exception of the Trinidad locust which is included here, the North-American forms usually referred to *Leptysma* are not typical, and, according to the present writer, should be separated and placed by themselves in a new genus. The character "fastigium as long as, or longer than, the longest diameter of the eyes" is not true of these insects, while their body is comparatively robust instead of linear. There are at least two very distinct species of this second group, both of which belong to Mexico or Central America. The individuals in both forms are variable as to general shape, punctuation, and coloration.

Synopsis of the Species of Leptysma.

A. Body very slender, almost linear ; the hind femora short and weak. Fastigium of the vertex as long as, or longer than, the longest diameter of the eyes . . . . . [1. *minima*, Bruner.]

AA. Body comparatively robust ; the hind femora longer and more robust. Fastigium of the vertex shorter than the longest diameter of the eyes.

b. Body slender, but in nowise linear. Antennæ fully as long as, or longer than, the combined length of the head and pronotum . 2. *mexicana*, Sauss.

bb. Body more robust. Antennæ always shorter, sometimes considerably so, than the combined length of the head and pronotum . 3. *marginicollis*, Serv.

[1. **Leptysma minima,** Bruner.

Leptysma minima, Bruner, Journ. N. Y. Ent. Soc. xiv. p. 152 (1906) [1].
? *Leptysma filiformis*, Boliv. Orthopt. Cuba, p. 31 (1888) [2].

Hab. TRINIDAD [1]; CUBA ? [2].

This species was described from a single female specimen that was collected in alcohol and subsequently pinned. It approaches *L. gracilis*, Bruner, from South-eastern Brazil, most closely in size. The insect referred to by Bolivar as *L. filiformis*, Serv., possibly belongs here.]

2. **Leptysma mexicana,** Saussure. (*Cornops mexicanum*, Tab. III. figg. 25, 25 *a*.)

Opomala mexicana, Sauss. Rev. et Mag. Zool. 1861, p. 156 [1]; Thomas, Acrid. N. Am. p. 197 (1873) [2].
? *Arnilia mexicana*, Boliv. Orthopt. Cuba, p. 31 (1881) [3]; Scudd. Cat. U.S. Orthopt. p. 46 (1900) [4].
Leptysma mexicana, Riley, N. Am. Fauna, vii. p. 252 (1893) [5].

Hab. NORTH AMERICA [2 4 5]; LOWER CALIFORNIA, San José del Cabo (*Calif. Acad. Sciences*).—MEXICO, Presidio (*Forrer*), San Rafael, Vera Cruz (*C. H. T. Townsend*).

Possibly the Cuban and some of the United States citations belong to the next species, which is a much more widely distributed and variable insect than the present.

3. **Leptysma marginicollis,** Serville. (*L. mexicana*, Tab. III. figg. 24, 24 *a*.)

Opsomala marginicollis, Serv. Hist. Orthopt. p. 591 (1839) [1].
Opomala marginicollis, Thomas, Acrid. N. Am. pp. 66, 196 (1873) [2].
Arnilia marginicollis, Stål, Recens. Orthopt. i. p. 86 (1873) [3].
Leptysma mexicana, Bruner, in litt. [4].

Hab. NORTH AMERICA [1–4], San Diego, California, Phœnix, Arizona (*coll. L. Bruner*), Texas (*coll. Zurich Mus.*).

Other Texas and Arizona records are at hand, and it is quite certain that this insect is to be met with at suitable localities throughout Northern Mexico. Arizona and California specimens are less profoundly punctured than eastern ones.

ARNILIA, Stål.

Arnilia, Stål, Recens. Orthopt. i. pp. 42, 84 (1873); Syst. Arid. i. p. 40 (1878).
Stenacris, Walker, Cat. Dermapt. Salt. Brit. Mus. p. 651 (1870) (in part.).

The representatives of the genus *Arnilia* are confined to tropical and subtropical America, where they occur among the rank grasses and sedges growing in and about swamps and along the margins of streams. This being true, it is quite probable that the actual number of species is comparatively large. At present only about a dozen are known, including those now described or characterized in the subjoined synoptic table. The species *cylindrodes* and *vitreipennis* may both be considered the types of the genus, because both were represented when the generic diagnosis was drawn up by Stål, as may be seen by an examination of pages 42 and 85 of his 'Recensio Orthopterorum,' i.

Synoptic Table of the Species of Arnilia.

A. Last ventral segment of male abdomen plain, unadorned at sides by dentiform processes or at the apex by flattened decurved lobes.
  b. Larger (♀, length 36–44 mm.).
    c. Antennæ decidedly ensiform. Hind tibiæ provided with 9–10 spines in the outer row. Tegmina acuminate. Wings rather strongly infuscated, or at least with obscure veins. (South-western Brazil.) . . . . . [*ståli*, sp. n.]
    cc. Antennæ only faintly ensiform or subensiform. Hind tibiæ 7-spined externally. Tegmina subacuminate. Wings not infuscate nor dark-veined.
      d. Hind tibiæ together with the tarsi wholly pale coral-red. The abdomen above testaceous . . . . . [*coccineipes*, Bruner.]
      dd. Hind tibiæ with a large green space towards the base. The abdomen above blood-red . . . . . 1. *viridis*, Serv.
  bb. Smaller (♀, length 24–35 mm.).
    c. Relatively robust species. Fastigium of the vertex obtuse or at most a right-angle. Sides of the pronotum and pleura without a piceous band.
      d. Prosternal spine moderately robust, equal, the apex blunt. (Rio de Janeiro and Eastern Brazil.) . . . . . [*cylindrodes*, Stål.]
      dd. Prosternal spine inflated at apex, gently retrorse. (Corumba, Brazil.) . . . . . [*interior*, sp. n.]
    cc. Relatively slender species. Fastigium of the vertex acuminate. Sides of the pronotum and pleura adorned with a piceous line above the pale one. (Paraguay and S. Brazil.) [*gracilis*, G.-Tos.]

AA. Last ventral segment of the male abdomen provided on each side with a more or less prominent spine or tooth, or the apex furnished with flattened decurved lobes.

b. Subgenital plate or last ventral segment of male abdomen adorned at sides with teeth or finger-like projections.

c. Larger (length, ♂ 25–28, ♀ 28–33 mm.). The last dorsal segment of the male abdomen unadorned with black or fuscous, the margins of the supra-anal plate alone so marked *.

d. Last ventral segment of the male abdomen greatly elongate, more than twice, almost three times, as long as its basal width, the apical portion narrower, elongate, spatulate, and excavated above, about twice the length of the lateral teeth. (South-eastern United States.) . . . . [2. *vitreipennis*, Marsch.]

dd. Last ventral segment of the male abdomen only about twice as long as its basal width, the apical portion broadly spatulate and fully two and one-half times the length of the lateral teeth. (Costa Rica and Nicaragua.) . . . 3. *marschalli*, sp. n.

cc. Smaller (length, ♂ 21–24, ♀ 25 mm.). Hind margin of the last dorsal segment of the male abdomen adorned with black . . . . . 4. *minor*, Bruner.

bb. Subgenital plate of male deeply fissured, the lateral pieces greatly flattened and bent backwards, their outer margin bowed.

c. Smaller and more slender (length, ♂ 24, ♀ 32 mm.). Antennæ ferruginous, normal. (Trinidad I. and British Guiana.) . . . . . [6. *fissicauda*, sp. n.]

cc. Larger and more robust (length, ♂ 27, ♀ 36 mm.). Antennæ infuscated, heavy, and longer than usual. (Colombia.) 7. *colombiæ*, sp. n.

1. **Arnilia viridis**, Serville?

Opsomala viridis, Serv. Rev. Orthopt. p. 77 (1831) [1]; Hist. Orthopt. p. 588 (1839) [2].
Arnilia viridis, Bruner, Proc. U.S. Nat. Mus. xxx. pp. 659, 660 (1906) [3].

Hab. NICARAGUA, Chontales (*Janson*).

A single female. The insect referred here with some doubt has been preserved in spirits and subsequently pinned. It is somewhat smaller and a trifle more slender than *A. coccineipes*, Bruner, from Southern Brazil and Paraguay. No locality was given by Serville [1 2].

* Another apparently distinct species, *A. propinqua*, No. 5, is at hand; but, being represented by females only, it cannot be located in the table. The description follows in the body of the work, see p. 257.

[2. **Arnilia vitreipennis,** Marschall.

Gryllus vitreipennis, Marsch. Ann. Wien. Mus. i. pp. 214–215, t. 18. fig. 6 (1836) [1].

Stenacris chlorizans, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. pp. 652, 653 (1870) [2].

Arnilia chlorizans, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 88 (1877) [3]; Cat. Orthopt. U.S. p. 46 (1900) [4].

Arnilia cylindrodes, Stål, Recens. Orthopt. i. p. 85 (1873) (in part.) [5]; Scudd. Cat. Orthopt. U.S. p. 46 (1900) [6].

Hab. North America, South-eastern States [1–6].

This insect seems to be restricted to the Southern Atlantic and Gulf States of North America, where it occurs in swampy or wet localities. It was undoubtedly the male of the Carolina species that Stål had before him when he drew up his description of the subgenital plate of this sex: "segmento genitali maris longo, producto, pone medium utrinque lobo sat longo dentiformi armato, parti apicali pone illos lobos producta, angusta, superne excavata" (Recens. Orthopt. i. p. 42). South-American specimens of at least three species examined by me lack the lateral teeth. The Rio Janeiro and Carolina individuals certainly represent two distinct forms.]

3. **Arnilia marschalli,** sp. n.

An insect of medium size and robustness, in which the sides of the head, lower lateral margins of the pronotum, and the pleura are quite conspicuously banded with dirty white or pale testaceous, and in which the dorsum of the abdomen is dull plumbeous.

Head of about the same width as the front edge of the cylindrical or subcylindrical pronotum; the occiput a little longer than the hind lobe of the pronotum; fastigium of the vertex in the male very slightly acuminate, in the female gently obtuse, rather rugosely punctate and without a perceptible sulcus. Eyes normal, separated above by a space equal to (♀), or slightly less than (♂), the width of the frontal costa between the antennæ. Frontal costa continuous, rather profoundly sulcate. Antennæ filiform, or with the basal joints very greatly depressed, in the female about as long as, and in the male a little longer than, the head and pronotum together. Pronotum very gently but broadly constricted at sides, the surface above closely punctate, at sides less densely so, except on the hind lobe, the transverse sulci strongly impressed. Tegmina and wings rather narrow, a little surpassing the tip of the abdomen and hind femora; the former less sparsely veined on the basal third than are those of *vitreipennis*, Marschall, from the Southern United States. Hind femora nearly or quite reaching the apex of the abdomen; the hind tibiæ slender, seven-spined externally. Last ventral segment of the male abdomen as described in the synoptic table. The supra-anal plate also as there mentioned. Prosternal spine straight, equal, a little more than twice as long as its diameter, gently directed to the rear.

General colour pale green, inclining to flavous below. Sides of the head, lower margin of the sides of pronotum and the pleura marked by a conspicuous longitudinal pale band which is bordered above by one of dull piceous. Dorsal portion of the tegmina, disk of the pronotum, and the occiput tinged more or less strongly with ferruginous. Wings basally bluish-grey, smoky apically. Antennæ ferruginous. Tip of the hind tibiæ and their tarsi tinged with red.

Length of body, ♂ 25, ♀ 29; of antennæ, ♂ 9, ♀ 8; of pronotum, ♂ 4·1, ♀ 5; of tegmina, ♂ 20, ♀ 25; of hind femora, ♂ 13, ♀ 16 millim.

Hab. Costa Rica, Juan Viñas (*L. Bruner, M. A. Carriker, M. Carey*), Port Limon (*M. A. Carriker*).

This insect was found to be very common in March about the borders of a swamp

and at the edge of a small stream, where it was taken from aquatic vegetation, to which it clung tenaciously. When disturbed it jumped and flew readily, but very frequently tried to hide by dodging to the opposite side of the blade of grass or stem, to which it clung.

4. **Arnilia minor,** Bruner.

Arnilia minor, Bruner, Ohio Naturalist, vii. pp. 11, 12 (1906) [1].

As the original description of this species was based solely on the male, it is thought best to give herewith a modified description including both sexes:—

Smaller and a little more slender than *A. marschalli*, the subanal plate of the male abdomen shorter and differently constructed, the wings paler, and with less distinct pale lateral bands.

Fastigium of the vertex a little longer than broad at the base, the middle provided with a shallow longitudinal sulcus. Eyes somewhat prominent, the portion of the cheeks below them a little shorter than their shortest diameter, separated above by a space equal to the diameter of the second antennal joint (♂) or the width of the frontal costa between the antennæ (♀). Face a little more oblique than in *A. vitreipennis*. Antennæ slender, about as long as the head and pronotum combined. Pronotum closely punctate, not quite as smooth at sides as in *A. marschalli*; the transverse sulci moderately impressed, the posterior one slightly sinuous at middle; median carina visible throughout in the female, nearly obliterated on the anterior lobe in the male.

Tegmina proportionately longer than in the preceding species, a little more acuminate, and more closely veined on the basal third. Hind femora slender and reaching the tip of the abdomen in both sexes. Prosternal spine robust, the apex bluntly rounded. Last ventral segment of male abdomen short, about as long as its basal width, the lateral teeth short and gently divergent. Hind margin of the last dorsal segment provided with three black spots, the lateral margins of the supra-anal plate pale, but the carina at sides of median sulcus narrowly adorned with black. Hind tibiæ very slender.

General colour pale grass-green, scarcely marked with the pale lateral lines or dorsal ferruginous tinge so prominent in most specimens of the preceding species. Wings clouded with bluish-grey and fuscous, but to a less degree than in *A. marschalli*.

Length of body, ♂ 21, ♀ 25; of pronotum, ♂ 3·55, ♀ 4·1; of antennæ, ♂ ♀, 7; of tegmina, ♂ 20, ♀ 23; of hind femora, ♂ 11·5, ♀ 14 millim.

Hab. MEXICO, Medellin, Vera Cruz (*Rev. Heyde*); GUATEMALA [1], San José (*J. S. Hine*).

Two females, one of which was captured in February. I have also before me a male of similar size and form that has been preserved in alcohol, and which bears the label "Central America, Heyde." It shows a decided trace of the pale line on the sides of the head and body, and also has some dark colour on the lateral margins of the supra-anal plate.

5. **Arnilia propinqua,** sp. n.

This locust is very similar in general form and appearance to the female of *A. minor*, but it is much larger, being about the size of *A. fissicauda* and *A. cylindrodes*. It is somewhat more slender and has slightly longer tegmina and wings, however, than they have. The fastigium of the vertex is blunt and without the faint longitudinal median sulcus mentioned in connection with the description of one or two of the other species. Its dorsum is more or less ferruginous on the occiput, the disk of the pronotum, and the folded tegmina. The face, sides of head, sides of pronotum, pleura, costal area of tegmina, and legs are pale

grass-green, and the wings are very pale grey-blue with darker veins. The clypeus, labrum, and hind tarsi are roseate.

Length of body, ♀, 28; of antennæ 8·5, of pronotum 5, of tegmina 27, of hind femora 15 millim.

Hab. MEXICO, Atoyac, Vera Cruz (*Schumann*); GUATEMALA, Amatitlan (*J. S. Hine*), San Gerónimo (*Champion*).

The collections studied contain still other specimens of the genus which may represent at least one, if not two, additional species. These are of about the size of *A. propinqua*, but show well-defined lateral pale stripes and have very short antennæ, being but 7 millim. long. They were collected by the Rev. T. Heyde in the province of Vera Cruz, and by H. H. Smith at Cuernavaca, Morelos.

[6. **Arnilia fissicauda,** sp. n.

Arnilia cylindrodes, Bruner, Journ. N. York Ent. Soc. xiv. p. 153 (1906) (nec Stål).

The present species is a medium-sized and moderately slender insect, which in general appearance reminds one of both *A. marschalli* and *A. vitreipennis,* but which differs decidedly from both of these in the structure of the last ventral segment of the male abdomen and in that of the cerci as well.

Fastigium of the vertex gently acuminate and somewhat longer than wide at base (♂), or about as long as broad and meeting in front in a right angle (♀), longitudinally sulcate in both sexes. Eyes not prominent, nearly twice as long as broad. Antennæ normal, about as long as (♀), or somewhat longer than (♂), the head and pronotum taken together. Pronotum coarsely and rather closely, but not deeply punctate above, more finely and sparsely so at sides; anterior edge broadly and shallowly emarginate; median carina visible, but not prominent throughout. Tegmina less closely veined than the species with which it is compared above, acuminate at apex, extending about 5 mm. beyond the apex of the hind femora. Hind femora of medium robustness, a trifle shorter than the abdomen in both sexes. Last ventral segment of male abdomen with the apex broadly rounded, deeply fissured in centre, the lobes bent back, flattened and broadly scimitar-shaped, with the apices a little overlapping. Cerci slender, and with the apex pointed, instead of chisel-like as in *A. vitreipennis*, *marschalli*, and *minor*. Hind edge of last dorsal segment and lateral margins of supra-anal plate scarcely or not at all infuscated. Prosternal spine slender and directed gently to the rear.

General colour pale testaceous-green above and at sides, with the underside flavous. Sides of the head, lower field of lateral lobes of the pronotum, and pleura narrowly streaked with dirty white. Tegmina and wings somewhat infuscated, the veins more or less lead-coloured.

Length of body, ♂ 24, ♀ 32; of pronotum, ♂ 4·15, ♀ 5·2; of tegmina, ♂ 21·5, ♀ 26; of hind femora, ♂ 13, ♀ 16 millim.

Hab. TRINIDAD (*H. D. Chipman*: ♂); BRITISH GUIANA, Demerara (*R. J. Crew*: ♀).

The female from British Guiana seems to belong here; at any rate it differs somewhat from the insect which has been provisionally called *A. cylindrodes.*]

7. **Arnilia colombiæ,** sp. n.

An insect a little larger and more robust than the average in this genus, and which has darker-coloured, heavier, and longer antennæ than usual. The male characters are similar to those of the preceding, but more pronounced. The pale line on sides of head, pronotum, and pleura is bordered above with piceous. The hind femora are rather robust and long, and the hind tibiæ are decidedly heavy.

Length of body, ♂ 27, ♀ 36; of antennæ, ♂ 12, ♀ 11; of pronotum, ♂ 4·85, ♀ 6; of tegmina, ♂ 23, ♀ 29; of hind femora, ♂ 13·5, ♀ 17 millim.

Hab. COLOMBIA, San Diego, Department of Magdalena (*coll. Carnegie Museum*).

One male and four females. This insect almost certainly reaches far enough along the isthmus, northward, to be included in the Central-American fauna. It has a decidedly inflated fastigium of the vertex, that is also sulcate longitudinally, and the prosternal spine is long, coarse, and blunt at its apex.

INUSIA, Giglio-Tos.

Inusia, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 302, p. 30 (1897); xiii. no. 311, p. 44 (1898); Bruner, Journ. N. York Ent. Soc. xiv. p. 151 (1906).

The present genus is composed of several species of nearly related, medium-sized, tropical locusts. Their general colour is brownish above and greenish-yellow below. They are found in low swampy places at the margins of groves or forests. The type of *Inusia* is *I. gracillima* of Giglio-Tos. The various forms may be separated by the accompanying table :—

Synopsis of the Species of Inusia.

A¹. Form very slender. [South-American species.]
  *b*¹. General colour above fusco-olivaceous inclining to ferruginous, the middle of sides of head, pronotum, and pleura longitudinally marked by a yellow line. Posterior tibiæ 6-spined externally. [South-east Bolivia.] . . . . . [*gracillima*, Gig.-Tos.]
  *b*². General colour above pale green; the sides of head, pronotum, and pleura longitudinally marked by an obscure piceous band. Posterior tibiæ 7-spined externally. [Paraguay.] . . . . . [*pallida*, Bruner.]

A². Form more robust. [Middle and Northern South America.]
  *b*¹. Discal area of tegmina provided with two more or less well-defined intercalary veins.
    *c*¹. Smaller (length, ♂ 18, ♀ 24 mm.). The tegmina with their apex rather bluntly rounded, and extending but little beyond the tip of the hind femora. [Costa Rica.] . . . . . 1. *nana*, sp. n.
    *c*². Larger (length, ♂ 22, ♀ 24–26 mm.). The tegmina more acuminate and extending fully one-fifth of their length beyond the tip of the hind femora. [Brazil, Guiana, Trinidad.]
      *d*¹. More robust and slightly larger (length, ♂, 29 mm. to tip of tegmina). [Rio de Janeiro.] . . . . . [*janeirensis*, sp. n.]
      *d*². More slender and slightly smaller (length, ♂, 27 mm. to tip of tegmina). [British Guiana and Trinidad.] . . . . . [2. *chipmani*, Bruner.]
  *b*². Discal area of tegmina provided with three more or less apparent intercalary veins.
    *c*¹. Hind femora with their knees marked internally with dark brown or black. [Northern Mexico to Costa Rica.] . . . . 3. *bicolor*, sp. n.
    *c*². Hind femora with their knees at most only tinged with pale ferruginous. [Province of Vera Cruz, Mexico.] . . . . . 4. *inornatipes*, sp. n.

1. **Inusia nana,** sp. n.

This is the smallest species of the genus so far as known, and may be recognized from its allies by its shorter and blunter tegmina.

Length of body, ♂ 18, ♀ 24; of pronotum, ♂ 3·25, ♀ 4·9; of tegmina, ♂ 18, ♀ 21; of hind femora, ♂ 11·5, ♀ 13·25 millim.

Hab. Costa Rica, Limon [1 ♂] (*M. A. Carriker*), Pozo Azul [1 ♀] (*L. M. Underwood*).

[2. **Inusia chipmani,** Bruner.

Inusia chipmani, Bruner, Journ. N. York Ent. Soc. xiv. p. 154 (1906).

Hab. South America, British Guiana (*coll. L. Bruner*), Trinidad.]

3. **Inusia bicolor,** sp. n.

As indicated in the synoptic table of the species, the tegmina of this form are provided with three intercalaries, and the internal face of the apical portion of the hind femora is strongly marked with black or dark brown. In general colour it is very similar to *I. chipmani*, which was quite fully described in the paper on the "Orthoptera of the Island of Trinidad."

Length of body, ♂ 22, ♀ 27; of pronotum, ♂ 4·35, ♀ 5·4; of tegmina, ♂ 23, ♀ 26; of hind femora, ♂ 13, ♀ 15; of antennæ, ♂ ♀, 10 millim.

Hab. Mexico, Tampico in Tamaulipas (*coll. Ill. St. Lab. Nat. Hist.*), Venta de Peregrino in Guerrero, Teapa in Tabasco (*H. H. Smith*), Valladolid in Yucatan (*Gaumer*); Guatemala, Chacoj in Vera Paz (*Champion*), Los Amates (*J. S. Hine*); Costa Rica, San Mateo (*P. Biolley*); Central America (*Rev. Heyde*).

The Costa Rican specimens are not quite typical, but are not sufficiently distinct to be described as a separate species. The example from Vera Paz is very pale above, with a narrow dark line on the sides of the pronotum, but is otherwise practically the same as the type-form, which comes from Los Amates, Guatemala.

4. **Inusia inornatipes,** sp. n.

The present species, or form, is very similar to the preceding in size and general shape, but differs from it in lacking the dusky markings on the inner face of the knees of the hind femora.

Hab. Mexico, San Rafael in Vera Cruz (*C. H. T. Townsend*).

Several specimens.

STENOPOLA, Stål.

Stenopola, Stål, Recens. Orthopt. i. p. 83 (1873); Syst. Acrid. i. p. 39 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 46 (1898).

This is another of the South-American genera of locusts of the group that extends northward to Central America and the West Indies. At least two species are probably represented in "Biologia" territory, and they may be separated as follows:—

Synopsis of the Species of Stenopola.

A[1]. General colour bright yellowish-green, the upper half of the sides of the thorax and the disc of the tegmina infuscated. Hind tibiæ and tarsi unicolorous, green-blue . . . . . 1. *xanthochlora,* Marsch.

A[2]. General colour pale greenish-yellow, the upper half of the sides of the thorax and the tegmina not much infuscated. Hind tibiæ and tarsi varicoloured, the first and second joints of tarsi carneous . . 2. *limbatipennis,* Stål.

1. **Stenopola xanthochlora,** Marschall.

Gryllus xanthochlorus, Marsch. Ann. Wien. Mus. i. pp. 215, 216, t. 18. fig. 7 (1836) [1].
Stenopola xanthochlora, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 4 (1897) [2].

Hab. Panama, Forest of Rio Cianati, Darien [2].—South America, Brazil [1].

This insect certainly occurs further to the northward along the Isthmus into Costa Rica, where it should be looked for among the grasses growing about water, as the margins of streams, swamps, and lakes or lagoons.

2. **Stenopola limbatipennis,** Stål.

Stenopola (*Oxyblepta*) *limbatipennis,* Stål, Recens. Orthopt. i. p. 85 (1878) [1].
Stenopola limbatipennis, Bruner, Journ. N. York Ent. Soc. xiv. p. 154 (1906) [2].

Hab. South America, Remedios in Colombia [1], Trinidad [2].

HENIA, Giglio-Tos.

Henia, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, pp. 45, 55–56 (1898).

This genus of locusts, which is related to *Stenopola* and *Cornops*, is included on the grounds that the majority of these subaquatic insects of the Tropics are generally more widely distributed than are the forms which occur in localities away from aquatic vegetation. Only a single species is known.

1. **Henia frenata,** Marschall.

Gryllus frenatus, Marsch. Ann. Wien. Mus. i. p. 212, t. 18. fig. 4 (1836) [1].
Henia frenata, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 56 [2] (1898).

Hab. South America, Don Diego, Colombia (*H. H. Smith, in coll. Carnegie Museum*), Ecuador [2], Brazil.

There is scarcely any doubt about the Colombian specimen being referable to the *Gryllus frenatus* of Marschall. It approaches very closely to *Stenopola*, but may be sufficiently distinct to form a separate genus if we consider the external sculpturing of the hind femora of generic value.

CORNOPS, Scudder.

Cornops, Scudder, Proc. Bost. Soc. Nat. Hist. xvii. p. 276 (1875); Entom. Notes, no. 4, p. 30 (1875); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 45 (1898).

The genus *Cornops* is represented in "Biologia" territory by at least one species. Like the members of several other genera belonging to the same region, these locusts are confined in their distribution to swampy or low wet ground at the margins of ponds, lakes, and streams, where they live among aquatic and semiaquatic vegetation.

Synopsis of the Species of Cornops.

A¹. General colour above in ♀ greenish-testaceous, in the ♂ grass-green; the sides of thorax above, along with the costal margin and discal field of the tegmina, black or rather strongly infuscated. [Island of Trinidad.] . [1. *insularis*, sp. n.]

A². General colour above grass-green, the sides of the thorax and the costal and discal areas of the tegmina brownish or ferruginous—much darker in the ♂. [Central America and Mexico.] . . . . . 2. *scudderi*, sp. n.

[1. **Cornops insularis**, sp. n.

? *Cornops bivittatum*, Bruner, Journ. N. York Ent. Soc. xiv. p. 154 (1906)[1].

Very similar to, but larger than, *Cornops bivittatum*, Scudd., and differing from that insect in lacking the black border to the labrum and the infuscation of the genicular portion of the hind femora. The antennæ of the ♀ of the present species are ferruginous, instead of fuscous as in *C. bivittatum*, while in the ♂ they are nearly black. General colour above (♀) greenish-testaceous on occiput of head and disc of pronotum, on tegmina inclining to ferruginous, (♂) grass-green; sides of head back of eyes, on the upper half of pronotum and the meso- and metathorax, and the costal and discal areas of the tegmina in the ♂ black, in the ♀ the band on sides of head and thorax only narrowly black-lined, the costal and discal areas of the tegmina ferruginous. Hind femora flavous tinged with green, the knees more or less strongly washed with ferruginous and slightly marked with piceous; the tibiæ greenish, infuscated apically, most strongly so in the ♂.

Length of body, ♂ 18·5, ♀ 29; of pronotum, ♂ 3·5, ♀ 5·6; of tegmina, ♂ 17, ♀ 25; of hind femora. ♂ 10·5, ♀ 15 millim.

Hab. ISLAND OF TRINIDAD (*H. D. Chipman, in coll. L. Bruner*).

This is the insect that was doubtfully placed by the present writer[1] under *C. bivittatum*, Scudder.]

2. **Cornops scudderi**, Bruner.

Cornops scudderi, Bruner, Ohio Naturalist, vii. pp. 12, 13 (1906)[1].

Since publishing the description of the ♂ insect a specimen of the ♀ has been received. It is much more uniformly green than the ♂, being but slightly marked along the sides of the head and the thorax by the dusky band, and is also rather robust in body, with comparatively short wings, that extend but little beyond the tips of the hind femora. Its measurements are as follows:—Length of body 26, of pronotum 5·5, of tegmina 22, of hind femora 16 millim.

Hab. MEXICO, Tampico in Tamaulipas (*coll. Ill. State Lab. Nat. Hist.*); GUATEMALA, Puerto Barrios.

A pair of this species was taken at Tampico in the month of December.

[TETRATÆNIA, Stål.

Tetratænia, Stål, Recens. Orthopt. i. pp. 34, 53 (1873); Syst. Acrid. i. p. 39 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 45 (1898).

? *Euparnops,* Scudder, Proc. Bost. Soc. Nat. Hist. xxvii. p. 275 (1875).

This tropical genus ranges from Peru to the northern portions of South America and contains several species. Only one of these is likely to occur within "Biologia" territory.

1. **Tetratænia surinama,** Linn.

Gryllus surinamus, Linn. Mus. Lud. Ulric. etc. p. 146 (1864) [1].
Acridium surinamum, Serv. Hist. Orthopt. p. 671 (1839) [2].
Tetratænia surinama, Stål, Recens. Orthopt. i. p. 53 (1873) [3].
Ommatolampis variegata, Burm. Handb. Ent. ii. 2, p. 637 (1838) [4].
Acrydium variegatum, De Geer, Mém. iii. p. 500, t. 42. fig. 8 (1773) [5].

Hab. South America, Surinam or Dutch Guiana [1–5], Brazil [5].

This insect may also be found in Venezuela and Colombia, in which case it would probably extend to the Isthmus of Panama, since several other species of Guianan locusts are similarly distributed.]

COPIOCERA, Burmeister.

Copiocera, Burm. Handb. Ent. ii. 2, p. 611 (1838).

The insects which go to make up the present genus occur throughout the countries of the northern half of South America and extreme southern North America. One species inhabits Central America, while the other is found in the West Indies. They may be separated as follows:—

Synopsis of the Species of Copiocera.

A[1]. Smaller (length, ♀, 37–38 mm.). Abdomen very bright blood-red. Hind femora deep sanguineous internally . . . . . [1. *erythrogastra,* Perty.]

A[2]. Larger (length, ♀, 45–48 mm.). Abdomen dull red. Hind femora scarcely, if at all, sanguineous . . . . . 2. *specularis,* Gerst.

[1. **Copiocera erythrogastra,** Perty.

Xiphicera erythrogaster, Perty, Del. Anim. Art. Bras. p. 86, t. 24. fig. 2 (1830–34) [1].
Opsomala erythrogastra, Serv. Hist. Orthopt. p. 589 (1839) [2].
Copiocera erythrogastra, Burm. Handb. Ent. ii. 2, p. 612 (1838) [3].

Hab. South America, British Guiana (*R. J. Crew*), Trinidad (*H. D. Chipman*), Brazil [1–3].

Probably the *Gryllus euceros* of Marschall [Ann. Wien. Mus. i. p. 216, t. 18. fig. 9 (1836)] is the male of this insect. If so, it should be added to the synonymy.]

2. **Copiocera specularis,** Gerstaecker.

Copiocera specularis, Gerst. Mittheil. naturwiss. Ver. Neu-Vorpomm. Rügen, xx. p. 35 (1888)[1]; Charakteristik einer Reihe bemerkens. Orthopt. no. 29, p. 77 (1888)[2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 417, 418, figs. 17, 18[3].

Hab. COSTA RICA, Pozo Azul and Limon (*M. A. Carriker*), San Carlos[3]; PANAMA, Chiriqui[1 2].

The specimens collected by Mr. Carriker are somewhat smaller than the measurements given by Gerstaecker, but otherwise agree very well with his description of the species.

EPISCOPOTETTIX, Rehn.

Episcopotettix, Rehn, Trans. Am. Ent. Soc. xxix. p. 13 (1902).

This genus, of which only a single species is known, seems to show affinities to both *Copiocera*, Burm. (spine-characters), and *Legua*, Walk. (=*Prorachthes*, Gerst.) (vertex-characters).

1. **Episcopotettix sulcirostris,** Rehn.

Episcopotettix sulcirostris, Rehn, Trans. Am. Ent. Soc. xxix. p. 13 (1902)[1].

Hab. MEXICO[1] (*coll. Acad. Nat. Sci. Phil.*).

Described from a single male. A female specimen of this genus, or of a nearly related one, is contained among a lot of South-American Orthoptera submitted to the present writer by the Carnegie Museum of Pittsburgh for determination. Unfortunately this latter specimen is without a locality-label.

EUCOPIOCERA, gen. nov.

Related to *Copiocera*, but differing from it in various respects, the chief of which are the longer and more prominent vertex, the subensiform antennæ, the greatly abbreviated tegmina and wings, and the non-transverse prosternal spine.

General form of body cylindrical, moderately slender. Head elongate, the front straight and greatly oblique; the vertex wide, nearly as broad as the shortest diameter of one of the elongate eyes; the fastigium gently elevated, a little more than twice as long in advance of the eyes as its greatest width, the apex rounded, broadly but shallowly sulcate, and provided with a slender median and two coarser parallel lateral carinæ that are continuous to the occiput, where they diverge and are somewhat interrupted internally by coarse punctures; outside of these lateral carinæ of the fastigium is an elongate depressed area, which meets a similar area comprising the lateral foveolæ; frontal costa continuous to the clypeus, very narrow above, but gradually and evenly widening below, sulcate from a point midway between the base of the antennæ and apex of the fastigium; antennæ as long as the hind femora, 20- or 21-jointed, the basal joints depressed. Pronotum with the sides parallel, no lateral carinæ, the median carina inconspicuous, present only in front and behind, anterior margin rounded, the hind edge sinuate, broadly and angulately emarginate, lower lateral edges straight, the hind lobe very short, not more than one-third the length of the anterior. Tegmina brachypterous, lateral, about three times as long as wide, the apex subacuminate Hind femora slender, much shorter than the abdomen. The latter strongly carinate; the last ventral segment elongate, acuminate; supra-anal plate rather small, the sides

parallel on basal three-fifths, the apex produced, the middle longitudinally bicarinated and broadly sulcate. Cerci short, about as long as broad at base, blunt, the apex rounded, marginal apophyses small, black; a small black tubercle immediately in advance of the base of the cerci. Prosternal spine coarse, enlarged apically and slightly directed to the rear, the upper surface flattened. Inner edges of the mesosternal lobes angulate, touching.

1. **Eucopiocera rubripes,** sp. n. (Tab. III. figg. 26, 26 *a*, ♂.)

General colour above brownish-testaceous, sides of face, lower edges of cheeks, lower edges of pronotum, and mesopleuræ conspicuously streaked with creamy-white; below pale testaceous. Antennæ arising a little in advance of the eyes, brownish-purple, save the immediate base, which is pale. Hind femora greenish externally, reddish internally, the knees also red, as are the hind tibiæ and tarsi. Anterior and middle legs olivaceous, the tibiæ and tarsi darkest.

Length of body, ♂, 28; of antennæ 12·5, of pronotum 3·95, of hind femora 12, of tegmina 4·15 millim.

Hab. Mexico, Omilteme in Guerrero, 8000 feet (*H. H. Smith*).

Only the type-specimen of this species has been examined. It was captured in July.

PROCTOLABUS, Saussure.

Ommatolampis (*Proctolabus*), Saussure, Rev. et Mag. Zool. xi. p. 393 (1859); Thomas, Acrid. N. Amer. p. 224 (1873).

Proctolabus, Stål, Syst. Acrid. i. p. 36 (1878); Giglio-Tos, Boll. Mus. Zool. Comp. Anat. Torino, xiii. no. 311, p. 46 (1898).

The representatives of the genus *Proctolabus*, Sauss., seem to be confined to Mexico; at least this appears to be the case in so far as indicated by the material available for study. Three or four species are at hand. They may be recognized by the annexed table:—

Synopsis of the Species of Proctolabus.

A¹. Abdomen, together with the ♂ cerci, rather strongly tinged with coral-red. Apex of the hind femora and base of the tibiæ black .	1. *mexicanus*, Sauss.
A². Abdomen and cerci of the ♂ not tinged with red. The apex of the hind femora at most a little infuscated internally.	
*b*¹. Tegmina fully developed in the ♂ (♀ unknown), as long as the abdomen. Hind femora internally and below coral-red; the tibiæ dull green or olivaceous	2. *gracilis*, sp. n.
*b*². Tegmina abbreviated, about one-half (♂), or less than (♀), the length of the abdomen. Hind femora not red internally and below, except at the apex; the tibiæ dull red	3. *brachypterus*, sp. n.

1. **Proctolabus mexicanus,** Saussure.

Ommatolampis (*Proctolabus*) *mexicana*, Sauss. Rev. et Mag. Zool. xi. p. 393 (1859) [1].

? *Proctolabus mexicanus*, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 533 [2].

Hab. Mexico, Toluca [1], Guadalajara in Jalisco [2], Rio Cocula (*O. W. Barrett*).

All the specimens examined by Mr. Rehn as indicated in his reference to this species (*loc. cit.*) and by the present writer vary somewhat from the brief diagnosis given by Saussure. It is barely possible that they may belong to still an additional species to those under consideration in the present work.

2. **Proctolabus gracilis,** sp. n.

This insect is slightly smaller and much more graceful than the preceding species. It also differs from it in having the pale longitudinal lateral line of the pleura continuous across the lower edges of the pronotum, the cheeks, and along the anterior edges of the eyes to the base of the antennæ. The hind femora are ferruginous externally and red internally, with a pale testaceous, prægenicular fascia and slightly infuscated knees. The supra-anal plate is broadly rounded apically and provided with four raised black tubercles on the basal half, the outer ones being slightly transverse and situated at the termini and sides of low, pale testaceous carinæ which border a shallow median sulcus. The cerci are rather strongly toothed, and edged above and below with black. The abdomen is testaceous, and has its apex but little enlarged.

Length of body, ♂, 20; of antennæ 11·5, of pronotum 3, of tegmina 14, of hind femora 10 millim.

Hab. Mexico, Amula in Guerrero, 6000 feet (*H. H. Smith*).

This species approaches *P. mexicanus*, Sauss., quite closely in the structure of the supra-anal plate, but otherwise seems to be very distinct. The type was found in August.

3. **Proctolabus brachypterus,** sp. n. (Tab. III. figg. 19, 19 *a*, ♂; *Dellia mexicana*, Tab. III. figg. 14, 14 *a*, ♀.)

About as large as, or a trifle larger than, *P. mexicanus*, but differing from that insect in the much shorter tegmina and wings, and in the absence of the reddish tinge on the abdomen and cerci. The present species is also much more closely and profoundly punctate than is *P. mexicanus*, and the hind femora have the upper and lower outer edges decidedly marked with pale testaceous or dirty white, at least in the male. The hind femora of the other sex (♀) show traces of dusky bands, both internally and externally.

General colour of ♂ dull olive-green above, the anterior and middle legs, and the femora of the hind pair, also olive-green; pleura, lower half of sides of pronotum, cheeks below the eyes, and the face anterior to the latter as far as the base of the antennæ, dirty ivory-white; venter flavous; hind tibiæ dull reddish-purple. The ♀ is almost uniformly dull brown, with a slight tinge of olive on the tegmina and pleura, and its antennæ are faintly annulate with testaceous. The supra-anal plate of the ♂ lacks the four raised tubercles present in both *P. mexicanus* and *P. gracilis*, while the tip of the cerci is slightly emarginate, so as to give these members an appearance of being gently furcate.

Length of body, ♂ 23, ♀ 31; of pronotum, ♂ 3·35, ♀ 5; of tegmina, ♂ ♀, 9–10; of hind femora, ♂ 11, ♀ 12–13 millim.

Hab. Mexico, Tres Maries Is. [1 ♀] (*Forrer*), Jalisco [2 ♂♂ and 1 ♀] (*Schumann*).

It is hardly probable that the insects described as the sexes of *P. brachypterus* could belong to distinct species, although the uniform brownish colour and traces of fuscous thigh-bands in the female specimens are so different from the male coloration. The Tres Marias Islands example also varies a little from the females coming from Jalisco. The insects (♂ and ♀) from the latter locality are made the types of the species *P. brachypterus*.

LEIOSCAPHEUS, gen. nov.

The genus *Leioscapheus* is composed of medium-sized locusts in which the prevailing colours are yellow and green, sometimes inclining to bluish. These insects are related to *Proctolabus*, Sauss., and *Anniceris*, Stål. They have the front moderately oblique, the eyes prominent, slightly longer than wide, the vertex very narrow, only about one-half the width of the diameter of the basal antennal joints. The antennæ are long and slender, more than twice the combined length of the head and prothorax, and composed of from 22 to 25 joints. Pronotum but little longer than wide, rapidly expanding on the hind lobe, which is much shorter than the anterior one, roundly advanced upon the occiput and frequently notched in the middle; the transverse sulci are broad and deeply impressed, while the hind margin is broadly rounded. Tegmina and wings somewhat abbreviated, from two-thirds to four-fifths the length of the abdomen; the former slightly corneous, and rather strongly and profusely veined. Hind femora neither especially robust nor yet markedly slender, extending a trifle beyond the tip of the abdomen, anterior and middle femora slender; hind tibiæ feebly spined, the number of spines varying from 2 to 7 externally and from 4 to 10 internally; the hind tarsi long and heavy, with the second joint slightly longer than the first, both the tibiæ and tarsi profusely set with long hairs. Valves of the ovipositor slender, straight, smooth and unadorned, the apices acuminate.

At least three species of the genus *Leioscapheus* are at hand, showing a distribution from Southern Mexico to Costa Rica. It is unfortunate that there are no males amongst the material studied. *L. gracilicornis* may be considered the type of the genus.

Synopsis of the Species of Leioscapheus.

A¹. Body and tegmina longitudinally striped with yellow and olivaceous-green, or, sometimes, with a bluish tinge. Antennæ unicolorous.
  *b*¹. Antennæ very long and slender, fuscous or black. Insect rather slender in form. [Costa Rica.] . . . . . 1. *gracilicornis*, sp. n.
  *b*². Antennæ ferruginous, heavier and less elongate. Insect more robust. [Vera Cruz, Yucatan.] . . . . . 2. *variegatus*, sp. n.
A². Body and tegmina not longitudinally striped. The antennæ distinctly annulate with flavous or testaceous. [Guatemala.] . . . . . 3. *annulicornis*, sp. n.

1. **Leioscapheus gracilicornis**, sp. n.

A moderately graceful, more or less glabrous insect, with long, slender antennæ, which slightly exceed twice the combined length of the head and the pronotum, and in which the hind tibiæ are dark plumbeous in colour. Eyes brassy, large and prominent, only a little longer than broad, separated above by a space equal to the diameter of the second antennal joint. Fastigium smooth, somewhat depressed, about as long as its basal width and provided with a slight longitudinal sulcus; frontal costa plane and fairly prominent between the antennæ, below the ocellus nearly obliterated. Front sparsely but coarsely punctate, the lateral carinæ heavy above and strongly divergent below, the cheeks also punctulate, the space below the eyes a trifle more than one-half the length of the latter; occiput short, bulging, also more or less strongly punctured. Pronotum small, rather longer than broad, the posterior lobe only about one-half the length of the smooth anterior lobe, profusely punctate; transverse sulci profound, the hind margin subangulate, the front border somewhat prominent, a little advanced upon the occiput and faintly notched or emarginate at the middle. Tegmina closely veined and nearly as long as the abdomen, gently tapering, the apex rounded, the costal field somewhat ampliate near the base. Abdomen slender and gradually tapering, the valves of the ovipositor slender, straight, unarmed. Hind femora comparatively slender, nearly or quite reaching the apex of the abdomen; hind tibiæ slender, irregularly

spined, the tarsi comparatively long and heavy, the second joint a little longer than the first and about equal to the third.

General colour above very dark oil-green modified by flavous, below pale greenish-yellow, the latter tints forming rather plain longitudinal bands on the disc of the pronotum and tegmina. Hind lobe of the pronotum and hind femora mostly dull ferruginous, the latter with the knees and a præapical band dusky. Hind tibiæ deep plumbeous, becoming paler at the sides towards the base. Antennæ dark brown or dull black, a few joints with very narrow pale tips, but scarcely noticeable to the unaided eye.

Length of body, ♀, 18; of pronotum 3·15, of tegmina 11, of hind femora 10·5, of antennæ 13 millim.

Hab. COSTA RICA, Pozo Azul (*M. A. Carriker*).

This insect must be a fairly common one, as several specimens were taken in company with *Anniceris meridionalis* during a few minutes of casual collecting.

2. **Leioscapheus variegatus,** sp. n. (*Anniceris variegata*, Tab. III. figg. 15, 15 *a*, ♀.)

A somewhat larger and more robust species than the preceding. It differs from that insect also in being lighter coloured, in having heavier antennæ, longer wings, and a comparatively longer and more strongly punctured pronotum, in which the transverse sulci are less profoundly impressed. The hind tibiæ and tarsi, as well as the antennæ, are more or less tinged with dull red, while the quadrivittate colour-pattern of the whole insect is much more pronounced than in *L. gracilicornis*.

Length of body, ♀, 23; of pronotum 4·4, of tegmina 14, of hind femora 13 millim.

Hab. MEXICO, Vera Cruz (*Schumann*), Valladolid in Yucatan (*Gaumer*).

Two females.

3. **Leioscapheus annulicornis,** sp. n.

Of about the same size and general structure as *L. gracilicornis*, but differing from it in having shorter annulate antennæ and in lacking the vittate markings of the pronotum and tegmina.

The general colour is dull olive-green, with a ferruginous tinge on the face, sides of the pronotum, mesothorax, and the base of the anterior and middle legs. There is also a darker longitudinal median area on the occiput and pronotum. The punctuation of the head and the pronotum is somewhat coarser and more marked than in the species to which it has just been compared, while the surface is less glabrous than in that insect.

Hab. GUATEMALA, San Isidro, 1600 feet, Pacific slope (*Champion*).

The only specimen at hand is mutilated to the extent of lacking both hind legs.

ANNICERIS, Stål.

Anniceris, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 37 (1878).

While *Anniceris* was first characterized as a South-American genus, the material at hand seems to indicate that it is also well represented north of the Isthmus of Panama to at least as far as the State of Vera Cruz in Mexico. The centre of distribution, however, appears to be in Costa Rica, where three species occur. The various forms, so far as known, are very similar in size and general colour, the latter being dilute olive-green. The different species may be separated by the annexed table.

Synopsis of the Species of Anniceris.

A¹. Fastigium of the vertex strongly declivous.
  *b*¹. Genicular portion of the hind femora reddish; the tegmina about as long as the pronotum. Hind tibiæ 6-spined externally . . . [1. *geniculatus,* Stål.]
  *b*². Genicular portion of the hind femora black; the tegmina at least half the length of the abdomen. Hind tibiæ 7-spined externally. 2. *viridulus*, sp. n.
A². Fastigium of the vertex horizontal or subhorizontal.
  *b*¹. Tegmina and wings almost twice the length of the pronotum, the tegmina with the radial veins on apical half black . . . . . 3. *nigrinervis,* Stål.
  *b*². Tegmina and wings greatly abbreviated, little, if any, longer than the pronotum, the tegmina of uniform colour throughout.
    *c*¹. Face without lateral carinæ . . . . . 4. *olivaceus,* Gig.-Tos.
    *c*². Face provided with more or less well-defined lateral carinæ.
      *d*¹. Abdomen green or greenish, very similar in colour to the rest of the insect. Genicular area of hind femora tinged with ferruginous . . . . . 5. *meridionalis,* sp. n.
      *d*². Abdomen varicoloured, but not green or greenish.
        *e*¹. Knees of hind femora blackish, the femora robust. Abdomen beneath cinnamon-brown . . . . . 6. *truncatus,* Rehn.
        *e*². Knees of hind femora deep verdigris-green, the femora more slender. Abdomen beneath greenish-yellow, tip of abdomen red . . . . . 7. *apicalis,* sp. n.

[1. **Anniceris geniculatus,** Stål.

Anniceris geniculatus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 82 (1878) [1].

Hab. South America, Peru [1].

This species is included because it is the type of the genus, and not because it is liable to be taken within the limits of the region covered by the present work.]

2. **Anniceris viridulus,** sp. n. (Tab. III. figg. 16, ♂; 17, 17 *a*, ♀.)

General colour of legs, pronotum, and tegmina olivaceous. The occiput, cheeks, back of eyes, upper edges of sides of pronotum, pleura, apex of hind femora, and apical portion of abdomen more or less varied with black. Entire insect glabrous.

♂. Head prominent, considerably broader than the front edge of the pronotum; eyes unusually large and prominent, somewhat elongate, fully twice the length of the infra-ocular portion of the genæ, separated above by a space scarcely as broad as the diameter of the elongate, filiform antennæ, which are moderately coarse as compared with those of either *A. meridionalis* or *A. apicalis* (infrà); fastigium rather strongly deflexed, faintly sulcate, truncate in front and separated from the frontal costa by a blunt transverse carina; frontal costa prominent above the ocellus only, gently and broadly sulcate at its upper extremity, viewed laterally rounded between the antennæ, below the ocellus rather indefinite; face sparsely and coarsely punctate, viewed in profile strongly oblique, the lateral carinæ present, but blunt; antennæ coarse, nearly or quite twice as long as the head and pronotum taken together. Pronotum glabrous, the anterior lobe but sparsely punctate, its sides nearly parallel; hind lobe shorter than the anterior one, closely and finely punctured, expanding posteriorly; the transverse sulci profound; front margin rather prominent, gently rounded and advanced in the middle upon the occiput, hind margin subangulate.

Tegmina more than half the length of the abdomen, the costal margin smoky-hyaline and narrowly devoid of veins, the apex rounded. Wings somewhat infuscated, as long as the tegmina. Hind femora only moderately robust, their greatest breadth about one-fifth of their length; the genicular lobes acuminate; hind tibiæ rather strongly hirsute and provided externally with seven spines; hind tarsi with the second joint four-fifths the length of the first. Cerci without any definite subapical teeth below, but somewhat undulate.

Colour as described above, the additional detail as follows:—Antennæ basally greenish, gradually becoming darker apically, where they are brown, without annulation. Abdomen greenish-testaceous; last dorsal and posterior half of preceding segment, as well as the apical portion of two or three of the terminal ventral segments and the border of the supra-anal plate and the tips of the cerci, strongly infuscated or black. Hind tibiæ olivaceous, the spines black.

♀. Fastigium of the vertex only gently depressed, narrowly sulcate; antennæ with the median joints narrowly annulate with flavous at their points of articulation, basally green, the apical joint pale. Genæ of hind femora ferruginous. Median carina of pronotum plain throughout, most prominent on the anterior lobe back of the "collar." Valves of the ovipositor slender, straight, without serration or apical hook. Tegmina as long as the head and pronotum combined, their apices rounded and their dorsal edges just touching.

Length of body, ♂ 16·5, ♀ 17·5; of pronotum, ♂ 3·1, ♀ 3·75; of tegmina, ♂ 7, ♀ 6·5; of hind femora, ♂ 10, ♀ 10·5; of antennæ 12·5 millim.

Hab. MEXICO, Atoyac in Vera Cruz (*Schumann*: ♂), Teapa in Tabasco (*H. H. Smith*: ♀).

One specimen from each locality, the male taken as the type.

3. **Anniceris nigrinervis,** Stål.

Anniceris nigrinervis, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 83 (1878) [1].

Hab. GUATEMALA, Purula in Alta Vera Paz (*Champion*).—SOUTH AMERICA, Colombia [1].

A single female. The insect referred to this species is of the opposite sex from the one described by Stål, but seems to fit in quite well with his characterization, although somewhat faded in colour through immersion in alcohol. Its pronotum is unusually smooth. The valves of the ovipositor are longer and more slender than usual and black-bordered; the sixth and seventh ventral segments are bivittate with black below, and the supra-anal plate and the last dorsal segments are likewise bordered or marked with the same tint. The first and second segments of the hind tarsi are equal in length, while the tibiæ are infuscated at the apex. In size it is about equal to the same sex of the preceding species, but the tegmina and wings are somewhat longer, measuring 8·25 mm. The antennæ lack the annulation as described for *A. viridulus*, ♀.

4. **Anniceris olivaceus,** Giglio-Tos.

Anniceris olivaceus, Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 4 (1897) [1].

Hab. PANAMA, Darien [1].

No specimens of this species are at hand, but the description is sufficiently concise to render its recognition easy.

5. **Anniceris meridionalis,** sp. n.

Similar in size and general colour to *A. viridulus*, but differing from that insect in its longer, annulate, more slender antennæ, the much shorter tegmina, in having pale (instead of blackish) genicular areas on the hind femora, and in lacking the prominent black markings on the sides of the head and pronotum, as well as those of the apical segments, supra-anal plate, and cerci of the tip of the male abdomen.

Colour pale olive-green, the sides of the head back of the eyes, pronotum above, and pleura narrowly banded with darker olive; tip of abdomen, genæ of hind femora, and hind tarsi somewhat tinted with pale testaceo-ferruginous, the cerci of male only along the upper edge and apically infuscated. The latter two-toothed on lower edge apically. Valves of female ovipositor much shorter and rather robust, as compared with those of *A. viridulus* and *A. nigrinervis*, the edges gently crenulate, the apex a trifle hooked and hardened for digging.

Length of body, ♂ 14·5, ♀ 17; of pronotum, ♂ 2·95, ♀ 3·80; of tegmina, ♂ 3, ♀ 5·75; of hind femora, ♂ 9, ♀ 12; of antennæ, ♂ 14·5, ♀ 11 millim.

Hab. Costa Rica, Pozo Azul (*M. A. Carriker*).

The tegmina and antennæ of this species vary slightly in length in different specimens from the same locality.

6. **Anniceris truncatus,** Rehn.

Anniceris truncatus, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 421, fig. 21 [1].

Hab. Costa Rica, Tarbaca [1] (*C. F. Underwood*).

Found in the month of November.

7. **Anniceris apicalis,** sp. n.

Most nearly related to the preceding (*A. truncatus*) than to any of the other species here enumerated and described, but differing from it most markedly in the respects as set forth in the synoptic table given above.

General form moderately slender, the antennæ of the ♂ rather heavy or coarse, nearly as long as the body, the apical joint depressed and longitudinally sulcate above. Fastigium subhorizontal, in front truncate and separated from the frontal costa by a prominent transverse carina; frontal costa prominent above, where it is broadest and plane, with a few coarse punctures, below narrowing and gradually fading away; lateral or facial carinæ blunt, but apparent throughout; face irregularly and rather coarsely punctate, the pronotum strongly and closely so. Transverse sulci of pronotum profound. Tegmina strongly abbreviated, in the ♂ not attingent above, in the ♀ the costal margins just touching.

General colour olive-green, flavous on sides of pronotum, pleura, and beneath; the head back of the eyes and upper margin of sides of pronotum very dark olive-green, almost black on the head; apical segments of abdomen red, the greater part of the last ventral segment of ♂ black, as well as the tips of the cerci and the valves of the ovipositor, the latter with the margins and tips constructed for digging.

Length of body, ♂ 14·5, ♀ 17; of pronotum, ♂ 2·55, ♀ 3·5; of tegmina, ♂ 4·25, ♀ 4·85; of hind femora, ♂ 9·35, ♀ 10 millim.

Hab. Costa Rica, San José (*C. F. Underwood*).

Two males and three females. On account of the bright red apex of the abdomen this is a beautiful insect.

DELLIA, Stål.

Dellia, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, pp. 37, 83 (1878); Syst. Acrid. i. pp. 37, 83 (1878); Brunner, Revis. Syst. Orthopt. p. 138 (1893); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 46 (1898); Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 422.

A Tropical-American genus composed of several small to medium-sized and rather strikingly-coloured locusts which live among the rank undergrowth in and about the margins of forests and jungles. One or two of the species are more or less metallic green or bronze in life, and produce a glittering effect as they hop about among the luxuriant vegetation.

At least four species have thus far been described. They may be separated as follows:—

Synopsis of the Species of Dellia.

A¹. Tegmina of moderate size and lateral. Apex of hind femora black.
  *b*¹. Larger (length, ♂, 18 mm.). Tegmina narrow. [Cuba.] . . . . [1. *insulana*, Stål.]
  *b*². Smaller (length, ♂ —?, ♀ 15·5 mm.). Tegmina oval. [Costa Rica.] . . . . . 2. *ovatipennis*, Rehn.
A². Tegmina very minute or entirely absent. Apex of the hind femora concolorous.
  *b*¹. Anterior and median femora oil-green. Tip of ♂-abdomen not strongly recurved . . . . . 3. *bimaculata*, Rehn.
  *b*². Anterior and median femora largely carmine. Tip of ♂-abdomen strongly recurved . . . . . 4. *miniatula*, Rehn.

[1. **Dellia insulana**, Stål.

Dellia insulana, Stål, Syst. Acrid. i. p. 83 (1878)[1]; Bolivar, Mém. Soc. Zool. Fr. 1888, p. 146[2]; Orthopt. Cuba, p. 31 (1888)[3]; Gundl. Ent. Cub. ii. p. 344 (1890)[4].

Hab. West Indies, Cuba [1–4].]

2. **Dellia ovatipennis**, Rehn.

Dellia ovatipennis, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 428–430, figg. 24, 27

Hab. Costa Rica, Carrillo [1].

This species is in all probability most closely related to the preceding, which is the type of the genus.

3. **Dellia bimaculata**, Rehn.

Dellia bimaculata, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 426–428, figg. 25, 26[1].

Hab. Costa Rica, Carrillo [1].

4. **Dellia miniatula,** Rehn.

Dellia miniatula, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 423–426, figg. 22, 23[1].

Hab. Costa Rica, Carrillo[1], Juan Viñas (*L. Bruner*).

This locust was common in some localities, where it was found during warm days when the sun shown brightest, among ferns and other green foliage. The mature males were so lustrous and gem-like as to suggest the generic name *Lithoscirtus* to the present writer, who had not then recognized Stål's genus *Dellia.*

COSCINEUTA, Stål.

Coscineuta, Stål, Recens. Orthopt. i. p. 33 (1873); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 4 (1897); xiii. no. 311, p. 46 (1898).

The genus *Coscineuta* belongs to Tropical America north of the equator, where the few species are rather widely distributed, but apparently rare in individuals. Two somewhat distantly related forms belong to our territory. They may be known by the characters mentioned below.

Synopsis of the Species of Coscineuta.

A[1]. Coxæ of all three pairs of legs coral-red. Wings pale transparent blue.
[Panama and vicinity.] . . . . . 1. *coxalis,* Serv.

A[2]. Coxæ concolorous, green or olivaceous. Wings not blue.

b[1]. Hind tibiæ blood-red, their base and apex black, the two basal joints of the hind tarsi olivaceous. [Isl. of St. Bartholomew.] . . . . [2. *virens,* Thunb.]

b[2]. Hind tibiæ greenish-yellow, their base and apex tinged with red, the hind tarsi coral-red. [Nicaragua.] . . . . . 3. *olivacea,* sp. n.

1. **Coscineuta coxalis,** Serville. (Tab. III. fig. 12, ♀.)

Acridium coxale, Serv. Hist. Orthopt. p. 672 (1839)[1].

Coscineuta coxalis, Stål, Recens. Orthopt. i. p. 52 (1873)[2]; Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 4 (1897)[3].

Hab. Central America[3]; Isthmus of Panama (*Rev. T. Heyde*).

This is a most beautiful and strikingly-marked insect when not preserved in spirits. The blood-red coxæ and the regular dark bands on the base of the abdominal segments must certainly render it very conspicuous in life.

[2. **Coscineuta virens,** Thunberg.

Gryllus virens, Thunb. Mém. Acad. Pétersb. v. p. 250 (1815)[1]; ix. p. 401 (1824)[2].

Coscineuta virens, Stål, Recens. Orthopt. i. pp. 52, 53 (1873)[3].

Hab. West Indies, Island of St. Bartholomew[1–3].]

3. **Coscineuta olivacea,** sp. n. (Tab. III. fig. 13, ♀.)

About the same size as *C. coxalis* and *C. virens*, but differing from them both in a number of respects. In fact it might even be placed in a new genus, but for the present, at least, it will be permitted to remain in *Coscineuta*.

General colour above brownish-olive with a tinge of ferruginous on the tegmina, paler beneath. The wings for most part brick-red, with the apex and outer half of anal border clouded with smoky-brown. Legs pale olive-green, the hind femora with their knees and the immediate base of the hind tibiæ infuscated, the latter greenish, becoming brownish apically; the metatarsi red.

Vertex between the eyes gently depressed, shallowly sulcate, about as wide as the diameter of the basal antennal joint; the fastigium nearly as long as wide, provided with a slightly raised and polished transverse carina that separates the vertex from the frontal costa. The latter moderately prominent above the ocellus and between the antennæ, where it is provided with a few coarse punctures; below the ocellus contracted, much narrower and nearly obliterated. Lateral or facial carinæ rather strongly divergent. Front and genæ coarsely, deeply punctate. Eyes brassy, fairly prominent, a trifle longer than broad and a little longer than that portion of the cheeks immediately beneath them. Occiput short and rather strongly punctulate in a <-shaped pattern. Pronotum profusely and sparsely punctured, without definite median carina; the anterior edge sinuate, roundly but shallowly emarginate at the middle, hind edge obtusangulate; the transverse sulci moderately impressed, and the hind lobe about one-fifth shorter than the anterior one. Tegmina and wings as long as the abdomen; the former of moderate width, comparatively coarse-veined and with their apex rounded; the latter broad, and with the apex docked and more or less undulate as in *Chrysopsacris*, Bruner, and *Bactrophora*, Westwood. Hind femora robust, about as long as the abdomen, tibiæ 6-spined externally and 8-spined internally; hind tarsi with the second joint about two-thirds the length of the first, and together with the tibiæ rather hirsute. Valves of the ovipositor with the apices slender and strongly hooked. Prosternal spine pyramidal, acuminate. Antennæ filiform, a trifle longer than the head and pronotum together, the two apical joints a little paler than the preceding, which are brown or infuscated.

Length of body, ♀, 27; of pronotum 6, of tegmina 19, of hind femora 14 millim.

Hab. NICARAGUA, Chontales (*Janson*).

A single female specimen only has been received.

ZOSPERAMERUS, gen. nov.

A tropical genus composed of medium-sized, decidedly variegated locusts, with prominent eyes, narrow vertex, strongly and profusely punctured pronotum, and long-jointed hind tarsi. These insects are closely related to *Bucephalacris*, Gig.-Tos, on the one side and to *Chrysopsacris*, Bruner, on the other. Only females are at hand and but two species represented. One of these belongs to the fauna included in the present work and the other comes from Pará, Brazil.

1. **Zosperamerus zonatipes,** sp. n. (*Anniceris nicaraguæ*, Tab. III. fig. 18, ♀.)

Wood-brown, varied with paler and darker markings on head, pronotum, and femora, and characterized by the very long-jointed, red and black hind tarsi. As the name implies, the legs, and especially the femora, are alternately pale and dark banded.

Head a little wider than the front edge of the pronotum, the occiput short and but little inflated; eyes large and subglobular, their diameter considerably exceeding the length of the anterior edge of the cheeks below them; vertex between the upper edges of the eyes narrow, somewhat less than the diameter of the basal antennal joint, depressed and gently sulcate anteriorly, the fastigium subhorizontal, about as long as wide, its anterior edge separated from the frontal costa by a raised carina; the costa rather prominent

and parallel between the antennæ and plane; below the ocellus lower, narrower, and gently sulcate, the sides a little divergent towards the clypeus. Face in profile somewhat oblique, gently punctate, the lateral carinæ prominent, straight and slightly divergent downward. Antennæ filiform, nearly one-half longer than the combined length of the head and pronotum. The latter with the anterior lobe cylindrical, the hind one divergent, the median carina visible throughout, severed by all three of the transverse sulci, which are deeply impressed; anterior margin sinuate, slightly advanced upon the occiput and gently emarginate at the middle, the hind margin above obtusangulate, the anterior lobe about one-fourth longer than the hind lobe. Tegmina two-thirds the length of the abdomen, narrow, gently tapering and with rounded apex, the basal portion coriaceous and closely veined, submembranous apically. Abdomen slender, carinate above, and armed with slender but normally curved ovipositor-valves. Anterior and intermediate femora slender, the posterior ones a trifle robust, nearly as long as the abdomen; the hind tibiæ slender, armed externally with from 6 to 7 weak spines, internally with 8, their tarsi two-thirds as long as the tibiæ, the basal and middle joints about equal, the terminal joint a little longer. The tibiæ and tarsi, along with the valves of the ovipositor, sparingly hirsute. Prosternal spine pyramidal, coarse, blunt.

Face, cheeks, occiput, pronotum, and pleura, together with abdomen above, pale wood-brown or dull testaceous barred and banded with dark brown and dull black. All the femora strongly, and the tibiæ faintly, banded with flavous and fuscous. Beneath paler, antennæ dark ferruginous.

Length of body, ♀, 21·5; of pronotum 3·95, of tegmina 11·5, of hind femora 11 millim.

Hab. NICARAGUA, Chontales (*Janson*).

This specimen was figured as an *Anniceris*, but the structure of the ovipositor, hind tarsi, and other parts would remove it from that genus. The specific name *zonatipes* is preferable to that of *nicaraguæ* used on the Plate.

ABILA, Stål.

Abila, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 21 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Univ. Torino, xiii. p. 46 (1898).

The genus *Abila* was erected for a South-American locust with rose-coloured hind wings. Whether or not any true representatives of the genus occur north of the Isthmus of Panama the writer cannot say. While examining the "Biologia" material an insect was encountered which seemed to belong to *Abila*, and not caring to establish a new genus for this species it is so included here.

1. **Abila(?) collaris,** sp. n. (Tab. III. figg. 11, 11 *a*, ♀.)

Above the medium in size; a uniformly dull, dark brownish-testaceous locust, with a conspicuous anterior collar and the principal transverse sulcus of the pronotum shining black, otherwise unadorned. Wings smoky-hyaline, with the costal margin brown and the principal veins infuscated.

♀. Head enlarged, prominent, a little wider than the front edge of the pronotum, occiput gently elongate and somewhat rounded; the eyes elliptical, moderately prominent, strongly divergent, separated above by a space equal to the width of the frontal costa between the antennæ; fastigium of the vertex scarcely separated from the vertex, very gently depressed, provided with a longitudinal carina, about as long as broad, the anterior edge truncate and separated from the frontal costa by a prominent transverse carina; frontal costa a little prominent and broadest between the antennæ, not sulcate, feebly punctate and narrowed below the ocellus, growing fainter but reaching the clypeus. Antennæ black, filiform, the apical joints testaceous. Pronotum strongly and closely punctate, the lobes about equal in length, the anterior one subcylindrical, a little tumescent at the sides, the hind one expanding; front edge rather

prominent and roundly advanced upon the occiput, hind margin obtusangulate, the median carina visible throughout but faint, lateral carinæ wanting, the sides of the hind lobe being provided with blunt shoulders; transverse sulci profound, continuous. The anterior edge or collar separated from the rest of the lobe by a deep stricture that appears as if impressed by a tightly drawn string. Pleura of meso- and metathorax strongly and closely punctate. Tegmina and wings complete, the former semi-membranous, rather strongly but sparsely veined, a little longer than the abdomen, the apex rounded; wings vitreous, shiny. Hind femora only moderately robust, the carinæ heavy but low, the upper one scarcely tuberculate, the pagination of outer face close and strongly oblique. Hind tibiæ noticeably shorter than the femora, robust, with short, strong, entirely black spines, nine on each margin, the outer apical one present but minute. Interspace between the mesosternal lobes strongly transverse, the inner edge of the lobes rounded; metasternal space nearly as wide as long. Prosternal spine pyramidal, coarse. Valves of the ovipositor large, exserted, the apices strongly hooked. Second joint of hind tarsi scarcely two-thirds as long as the first.

Length of body, ♀, 42; of pronotum 7·2, of tegmina 34, of hind femora 19, of hind tibiæ 15·5 millim.

Hab. MEXICO, Valladolid in Yucatan (*Gaumer*).

A single female. A second individual is before me as I write; it comes from Brazil and seems to differ sufficiently to constitute another species, and the two together a separate genus from *Abila* (vide anteà).

PSILOTETTIX, gen. nov.

The insects comprising this genus are rather small, short-bodied, but very robust, entirely apterous, with the surface throughout rugose, punctate. The head is about as broad as high, though somewhat narrower than the front edge of the pronotum, into which it is set nearly to the eyes; occiput not ascending, rather flat, provided with a median longitudinal carina and a broad depression in front and just back of the upper points of the eyes; the latter of medium size and prominence, rounded behind, nearly straight in front; the vertex moderately wide, but not quite so broad as the frontal costa between the antennæ, separated from the occipital pit by a blunt transverse ridge and provided with rather strong lateral walls; the fastigium depressed, broadly and gently sulcate, twice as wide as long, truncate in front; frontal costa moderately prominent between the antennæ, where it is broadest, a little narrowed both above and below, continuous to the clypeus, in nowise sulcate, save a gentle depression at the ocellus; face viewed laterally broadly arcuate, the lateral carinæ strongly divergent below; antennæ about 18-jointed, short, rather heavy, the joints a little depressed, especially apically and thereby giving to them a semi-clavate appearance. Pronotum gently tectate, evenly expanding posteriorly, the median and lateral carinæ well-defined, front and hind borders of disc straight, the transverse sulci very faint, two in number; posterior lobe very short, less than one-half the length of the anterior one. Hind femora moderately robust at base, gently tapering, the genicular portion small; hind tibiæ short and fairly heavy, 7-spined externally, 9-spined internally. Prosternal spine coarse, broadly transverse, the mesosternal space transverse, the edges straight, metasternal space somewhat longer than wide. Valves of ovipositor rather small but distinctly hooked, well obtected. Auditory apparatus quite conspicuous, nearly circular.

1. **Psilotettix obesus,** sp. n. (Tab. IV. figg. 12, 12 *a*, ♀.)

General colour (after immersion in alcohol) very pale testaceous, with a small dash of brown or piceous on sides of head back of eyes and on front edge of sides of pronotum, and an oblique dash on the outer side and two patches on the inner side of the hind femora, the latter also having the lower edge more or less infuscated between the lower carina and inferior margin of the outer face, as well as apically, in the sulcus. The genicular lunules are piceous. Besides these, there are a number of large blackish punctures scattered over the insect generally, giving it a mottled appearance.

Length of body, ♀, 16; of pronotum 4, of hind femora 10, width of metathorax 6 millim.

Hab. MEXICO, "Sierra Laguna" (*Gustav Eisen, in Mus. Calif. Acad. Nat. Sciences*).

The only mature example of this insect at hand was preserved in spirits, hence it is difficult to positively state as to the tint of the living insect or even of ordinary cabinet-specimens. The locality "Sierra Laguna" is not given in the reference-books at hand and is only surmised to be in Mexico, since the specimen was contained among others taken in the States of Jalisco, Sinaloa, and Sonora.

ARISTIA, Stål.

Aristia, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. iv. no. 5, p. 54 (1876); v. no. 4, p. 21 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. p. 46 (1898).

The present genus is introduced here on the strength of a single species from Costa Rica that appears to be somewhat aberrant in its general structure and appearance, as will be seen from an examination of the description of *A. depressicornis* which follows. Apart from this species, however, *Aristia* should reach Central America in one or two other forms which belong to northern South America, where several representatives of the genus are not at all uncommon.

1. **Aristia depressicornis,** sp. n.

The insect here described, although still in the nymph state, is sufficiently developed to prove that it is distinct from all of the described forms. The wings and tegmina are sufficiently large to indicate that the imago is nearly or quite macropterous. The structure of its antennæ is such as to show that they are ensiform or subensiform, or at least that these organs have the basal joints strongly depressed in the imago. The sides of the head, pronotum, pleura, and abdomen are piceous; the face, fastigium, occiput, disc of pronotum, tegmina, and dorsum of abdomen ferruginous. The disc of the pronotum is provided with a number of small black tubercles, in addition to the four large ones near the front edge of the anterior lobe. The front margin is strongly sinuose or emarginate. Head high, but not wider than the front edge of pronotum, the occiput somewhat ascending, nearly as long as the pronotum, viewed from the side rather strongly oblique, the frontal costa strongly produced between the base of the antennæ. Hind tibiæ provided with a rather prominent apical spine on the outer margin. Face, sides of head, and pronotum rugosely punctate and wrinkled.

Hab. COSTA RICA, Juan Viñas (*L. Bruner*).

A single immature specimen found in March.

PHÆOPARIA, Stål.

Phæoparia, Stål, Recens. Orthopt. i. pp. 35, 56 (1873); Syst. Acrid. i. pp. 21, 57 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 46 (1898).

The various representatives of the present genus are distributed over the northern portion of South America and the southern countries of Central America. They may be found among the fallen leaves and the lower shrubs and herbage growing in and at the margins of forests and groves. At least four species belong to, or may be looked

for in, the territory covered by the present treatise. They may be recognized by the characters given in the subjoined table.

Synopsis of the Species of Phæoparia.

A¹. Antennæ narrowly subensiform. Tegmina lacking the fuscous or black maculations. Ocelli large.
  *b*¹. Tegmina marked behind the middle by an interrupted oblique transverse white band . . . . . [1. *linea-alba,* Linn.]
  *b*². Tegmina without the transverse white band . . . . . [2. *castanea,* Brunner.]
A². Antennæ more slender, linear or sublinear. Tegmina usually maculate. Ocelli small.
  *b*¹. Fastigium of the vertex gently declivous.
    *c*¹. Apical joints of the maxillary palpi very distinctly depressed and ampliate. The antennæ longer.
      *d*¹. Tegmina with the apex obliquely truncate, the disc provided with fuscous maculations on the basal part . . . 3. *annulicornis,* Stål.
      *d*². Tegmina with the apex rounded, the disc without the fuscous maculations . . . . . 4. *rotundata,* Stål.
    *c*². Apical joints of the maxillary palpi not depressed or ampliate.
      *d*¹. Tegmina fusco-nebulous and provided with two or three dark maculations, the apex obliquely truncate. Wings dilute cinnabar . . . . . 5. *maculipennis,* Stål.
      *d*². Tegmina castaneous, without maculations and with the apex rounded . . . . . [6. *immaculata,* sp. n.]
  *b*². Fastigium of the vertex very strongly declivous. The tegmina greatly abbreviated. General colour green . . . . . [7. *emarginata,* Stål.]

[1. **Phæoparia linea-alba,** Linn.

Gryllus (*Locusta*) *linea-alba,* Linn. Mus. Lud. Ulric. p. 150 (1764)[1].
Phæoparia linea-alba, Stål, Recens. Orthopt. i. p. 57 (1873)[2]; Syst Acrid. i. p. 57 (1878)[3].
Truxalis sanguineus, Thunb. Mém. Acad. Pétersb. v. p. 270 (1815)[4]; N. Act. Ups. ix. p. 80 (1827)[5].

Hab. —— ? [1–5].

This species is undoubtedly the type of the genus and may occur within the territory embraced in the present volume.]

[2. **Phæoparia castanea,** Brunner.

Opomala castanea, Brunner, Verh. k. k. zool.-bot. Ges. Wien, xi. p. 225 (1861)[1].
Phæoparia castanea, Stål, Syst. Acrid. i. p. 57 (1878)[2].

Hab. Dutch Guiana. Paramaribo [1–2].]

3. **Phæoparia annulicornis,** Stål.

Phæoparia annulicornis, Stål, Recens. Orthopt. i. p. 57 (1873) [1]; Syst. Acrid. i. p. 57 (1878) [2].

Hab. COLOMBIA [1 2].

Probably extends to the Isthmus of Panama.

4. **Phæoparia rotundata,** Stål.

Phæoparia rotundata, Stål, Syst. Acrid. i. p. 57 (1878) [1]; Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 5 (1897) [2].

Hab. PANAMA, Chiriqui [1], Darien [2].

5. **Phæoparia maculipennis,** Stål.

Phæoparia maculipennis, Stål, Syst. Acrid. i. p. 58 (1878) [1]; Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 301, p. 5 (1897) [2].

Hab. PANAMA, Darien [2].—COLOMBIA [1].

Specimens of what are apparently this species coming from Northern Colombia have been examined by the present writer. They are contained in the collections of the Carnegie Museum of Pittsburgh. The collector was H. H. Smith.

[6. **Phæoparia immaculata,** sp. n.

Most nearly related to *P. annulicornis*, Stål, in size and general appearance, but differing from that insect in a number of points, as will be seen by an examination of the following description:—

Head rather large, a little wider than the front edge of the pronotum, the occiput elongate and somewhat ascending; eyes not unusually prominent, nearly twice as long as their extreme width; the vertex depressed, about as long as wide, moderately deeply sulcate; frontal costa sulcate throughout, a little wider above than below the ocellus, the upper portion most prominent. Face viewed laterally nearly straight, about as long below as above the base of the clypeus. Antennæ rather heavy, elongate, reaching nearly or quite to the base of the hind femora, the joints more or less depressed, in nowise ensiform or subensiform. Pronotum somewhat contracted laterally a little in advance of the middle, the anterior edge faintly but broadly emarginate, the hind margin obtusangulate, the surface on the disc closely but shallowly punctate, on the sides more coarsely so. General colour dark ferrugineo-brunneous, sides of head and pronotum fusco-piceous. Tegmina a little shorter than the abdomen, immaculate, but with the dorsal field pale flavo-testaceous, as is also the disc of the pronotum and the occiput for an equal width. The face is likewise of this same pale colour, but the labrum in the centre is piceous; maxillary palpi pale, the apical joint somewhat depressed. Antennæ at base testaceous, the rest black, with the exception of two paler annuli beyond the middle. Hind femora extending one-third of their length beyond the tip of the abdomen, rather slender, dark brown, almost black, with some patches of dark ferruginous externally and ruddy internally near the base; hind tibiæ strongly infuscated, 8-spined on outer carina. Lower surface of body and apical portion of abdomen above pale rufo-castaneous. Supra-anal plate elongate-triangular in general form, with the apex rounded, the lateral edges interrupted and sinuose at their middle and beyond, the disc provided with a median raised oblong process and two lateral wart-like tubercles, the latter situated just opposite the interruption in the two lateral margins. Anal cerci elongate, slender, directed backwards and roundly curved inwards on apical half, provided with a slight tooth-like process inwardly near the apex.

Length of body, ♂, 21; of antennæ 12, of pronotum 4·15, of tegmina 13, of hind femora 15 millim.

Hab. BRITISH GUIANA, Bartica, Demerara (*R. J. Crew, in coll. L. Bruner*).

A single male. Although this species was taken in a region distantly removed from Central America, its close relationship to *P. rotundata* of Stål would indicate that it might also be looked for in this latter country.]

[7. **Phæoparia emarginata,** Stål.

Phæoparia emarginata, Stål, Syst. Acrid. i. p. 59 (1878) [1].

Hab. VENEZUELA, Puerto Cabello [1].

This insect should also occur further to the westward, and in all probability as far along the Isthmus as Southern Costa Rica, as do quite a number of other tropical locusts.]

OMALOTETTIX, Bruner.

Jodacris, Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 302, p. 32 (1897) (part.).

? *Jodacris,* Bruner, Second Rep. Merchants' Locust Invest. Comm. Buenos Aires, pp. 66–68 (1900).

Omalotettix, Bruner, Proc. U.S. Nat. Mus. xxx. pp. 643, 672 (1906).

The present genus is composed of medium-sized, inconspicuously-coloured locusts that live in forests, where they occur among fallen leaves and on the stems of plants. At least six or eight well-marked forms have been examined by the present writer, while looking over collections of locusts coming from Tropical-American countries. One or two of these are known to belong to "Biologia" territory. Some of the others may be found later also to inhabit the same region, as they seem to be rather widely distributed.

Synopsis of the Species of Omalotettix.

A[1]. Hind femora with the lower edge and sulcus more or less decidedly infuscated or blackened, and their upper edge and outer disc more or less fasciate.

b[1]. Smaller (length, ♂ 13–15 mm., ♀ 19 mm.). Hind femora provided with a conspicuous patch on the outer face . . . 3. *signatipes*, Bruner.

b[2]. Larger (length, ♂ 16–20 mm., ♀ 19–24 mm.). Hind femora either without fuscous bands or with the bands continuous with those across the upper edge.

c[1]. Hind femora with the basal fuscous oblique band well defined and continuous. [Brazil, Brit. Guiana.] . . . [2. *meridionalis*, sp. n.]

c[2]. Hind femora with the basal band more or less obliterated on the outer face.

d[1]. Males and females nearly equal in size, the former 20 mm., the latter 24 mm. in length. [Brazil.] . . . [4. *chapadensis,* sp. n.]

d[2]. The sexes unequal in size, ♂ 17 mm., ♀ 21 mm. in length . . . . . 1. *nebulosa,* Bruner.

A². Hind femora with the lower outer edge and sulcus pallid, the upper edge and outer face only faintly fasciate.

*b*¹. Darker, varying from wood-brown to brunneo-ferruginous, not at all or but faintly conspersed with fuscous. [S. America.] . [5. *cæruleipennis*, Bruner.]

*b*². Lighter, varying from testaceous to brunneo-cinereous, profusely conspersed throughout with fuscous. [Brazil.] . . [6. *conspersipennis*, sp. n.]

1. **Omalotettix nebulosa**, Bruner.

Jodacris (?) *nebulosa*, Bruner, Second Rep. Merchants' Locust Invest. Comm. Buenos Aires, p. 67 (1900) [1].

Omalotettix nebulosus, Bruner, Proc. U.S. Nat. Mus. xxx. p. 673 (1906) [2].

Jodacris ferruginea, Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xii. no. 184, pp. 32–33 (1897) (part.) [3].

Hab. ? MEXICO.—SOUTH AMERICA, ? Colombia, Brazil, Paraguay, Argentina.

A single female specimen of this genus is at hand from the Dept. of Magdalena, Colombia, which I am inclined to refer to *O. nebulosa*, although it differs from that species in several respects. A couple of examples from the State of Guerrero, Mexico, also approach *O. nebulosa* more closely than they do *O. signatipes*.

[2. **Omalotettix meridionalis**, sp. n.

This species is somewhat larger than *O. nebulosa* and *O. signatipes*, and is characterized chiefly by the elongate tegmina and wings and the very conspicuous, oblique, fuscous basal band of the outer face of the hind femora. In colour it is quite strongly tinged with ferruginous.

Length of body, ♂ 17·5, ♀ 24; of pronotum, ♂ 3·4, ♀ 4·25; of tegmina, ♂ 18, ♀ 24; of hind femora, ♂ 10, ♀ 12·5 millim.

Hab. BRITISH GUIANA, Demerara; BRAZIL, Chapada.

Specimens of the two sexes are at hand from both localities given above. The insect surely enjoys a sufficiently wide known distribution to permit of its reaching the Isthmus of Panama.]

3. **Omalotettix signatipes**, Bruner.

Omalotettix signatipes, Bruner, Proc. U.S. Nat. Mus. xxx. p. 673 (1906) [1].

Hab. MEXICO, Acapulco in Guerrero (*H. H. Smith*), Temax and Valladolid in Yucatan (*Gaumer*).—SOUTH AMERICA, Paraguay and Brazil [1].

The specimens of this species from different localities vary somewhat in size and colour, but not sufficiently so to warrant their separation into distinct species or even varieties. Found at Acapulco in September.

[4. **Omalotettix chapadensis,** sp. n.

The characters given in the synoptic table, together with the more elongate cerci of the males, will enable one to recognize the species should it be found to occur in our region.

Hab. S. Brazil, Chapada.]

[5. **Omalotettix cæruleipennis,** Bruner.

Jodacris (?) *cæruleipennis,* Bruner, Locusts of Argentina, p. 68 (1900) [1].

Omalotettix cæruleipennis, Bruner, Proc. U.S. Nat. Mus. xxx. pp. 673, 674 (1906) [2].

Hab. South America, Paraguay, Argentina, and Brazil [1–2].

Both the present species and *O. conspersipennis,* which is briefly characterized in the synoptic table as No. 6, seem to be more restricted in their distribution and may not reach Central America.]

CHRYSOPSACRIS, gen. nov.

The present genus is based on several species of medium-sized tropical locusts that occur in portions of northern South and Central-American countries, *Gryllus bucephalus,* Marschall, being taken as the type. As will be seen by an examination of the synonymy and remarks given under *C. bucephala,* some confusion seems to have arisen as to which of several insects is the one that was described by Marschall.

The generic characters are given in the synoptic table of the genera of the subfamily Acridiinæ on page 215, and in connection with the description of *C. atrocephala* which follows.

Synopsis of the Species of Chrysopsacris.

A[1]. Prevailing colour of insect testaceous, ferruginous, and fuscous. The tegmina and wings of males nearly as long as the abdomen.

  b[1]. Sides of head below the eyes and lower half of pronotum pallid. Tegmina conspersed with fuscous; the hind femora plainly fasciate . . . . . 1. *bucephala,* Marsch.

  b[2]. Sides of head below the eyes and lower half of pronotum concolorous. Tegmina immaculate; the hind femora ferruginous, without transverse bands . . . . . [2. *atrocephala,* sp. n.]

A[2]. Prevailing colour of insect green. The tegmina and wings of the males two-fifths the length of the abdomen . . . . . 3. *costaricensis,* Rehn.

1. **Chrysopsacris bucephala,** Marschall.

Gryllus bucephalus, Marschall, Ann. Wien. Mus. i. p. 217, t. 18. fig. 9 (♂) (1836) [1].

[Nec *Bucephalacris bucephala,* Gig.-Tos, Zool. Jahrb. viii. p. 813 (1895); Boll. Mus. Zool. Anat. Comp. Torino, ix. no. 184, pp. 30, 31 (1897).]

Hab. South America, British Guiana (*coll. L. Bruner*); Brazil [1].

Specimens of an insect in the present writer's collection have been determined as Marschall's *Gryllus bucephalus*. While there can be but little doubt as to their identity, they are certainly not even congeneric with the insect which Dr. Giglio-Tos had before him when he diagnosed his genus *Bucephalacris*, on what he supposed was Marschall's species. This insect of Giglio-Tos' has characters which place it near *Anniceris* and *Proctolabus*. Ours, on the other hand, falls near *Jodacris* and *Omalotettix*. Since a second species of the genus which occurs in Costa Rica is also found in company with the present insect in British Guiana and Venezuela, it is more than likely that the range of *C. bucephala* will be found to extend at least to Panama.

[2. **Chrysopsacris atrocephala,** sp. n.

Of about the same size as that of the male of *C. bucephala* (*Gryllus bucephalus*, Marsch.), but differing from that species in the absence of all markings on the tegmina and legs, and especially on the hind femora.

Eyes large and prominent, suborbicular, a little longer than that portion of the cheeks below them; vertex between the eyes very narrow, about as wide as the diameter of the second antennal joint, linearly sulcate, the portion in advance horizontal, short, shallowly sulcate; face rugose and coarsely punctate, the frontal costa prominent between the base of the antennæ and shallowly sulcate and coarsely punctate, nearly as broad again as the width of the vertex, contracting below the ocellus and fading towards the clypeus; lateral facial carinæ but little divergent below, well-defined and coarse. Antennæ linear, coarse, a trifle longer than the hind femora, the basal joint large and fully twice the width of the vertex. Occiput short, shallowly bifoveolate laterally. Pronotum rather short, subcylindrical, without lateral carinæ, the surface rugoso-punctate, the transverse sulci rather profound, anterior lobe considerably longer than the hind one, the anterior edge a little rounded, the posterior edge obtusely angulate. Tegmina a little shorter than the abdomen, narrowed towards the apex, which is rounded, sparsely veined. Wings broad, blunt at the apex. Hind femora moderately robust, extending about one-third of their length beyond the apex of the abdomen. Hind tibiæ 7-spined in outer row. Third joint of the hind tarsi long and provided with long and strong claws. Abdomen short, fairly slender, the last ventral segment short and prow-shaped; the supra-anal plate simple, roundly triangulate, broadly and shallowly sulcate. Cerci rather stout, sub-pyramidal, a little longer than the basal width, with a stout internal basal tooth. Prosternal spine rather short, acuminate. Legs and abdomen hirsute.

The insect is coloured as follows:—Antennæ shining black; head dull brown-black, tinged with olive-green below the eyes, the latter ferrugineo-testaceous with a brassy tinge; pronotum brownish-testaceous, the pleura, abdomen, and pectus with a more ferruginous tinge; tegmina immaculate, brown, with testaceous nervures; wings deep blue, save the costal margin and apex, which are fuliginous. Hind femora vinous, the tibiæ infuscated apically; anterior and middle femora and tibiæ greenish, the tarsi tinged with dark ferruginous.

Length of body, ♂, 16; of antennæ 12·5, of pronotum 3·5, of tegmina 10·5, of hind femora 11 millim.

Hab. British Guiana, Demerara (*coll. L. Bruner*), Bartica (*coll. P. A. N. S.*).

Two males from each locality. The type was collected by R. J. Crew during the late winter and early spring of 1901.]

3. **Chrysopsacris costaricensis,** Rehn.

Jodacris (?) *costaricensis*, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 430–433, figs. 28, 29[1].

Hab. Costa Rica[1], Pozo Azul (*M. A. Carriker*).—British Guiana, Demerara (*coll. L. Bruner*).

Two males and one female from Demerara are before me. The Costa Rican specimen, a female, in the present writer's collection, is a little more slender than the example of the same sex coming from the Guiana locality, but does not appear to be greatly different otherwise.

[CALETES, Redtenbacher.

Caletes, Redt. Proc. Zool. Soc. Lond. 1892, pp. 209, 210; Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 47 (1898).

Caletes is somewhat closely related to *Vilerna*, Stål, and as the genus may be found to extend to Panama it is necessary to notice it here.

1. **Caletes apterus,** Redt.

Caletes apterus, Redt. Proc. Zool. Soc. Lond. 1892, p. 210, t. 16. figg. 11 *a*, *b* [1]; Brunner, ib. 1893, p. 606 [2].

Hab. West Indies, St. Vincent [1], Grenada [2] (*Broadway*).]

CLEMATODES, Scudder.

Clematodes, Scudd. Journ. N. York Ent. Soc. viii. p. 213 (1900).

This is another genus allied to *Vilerna*. It occurs in Northern Mexico and the South-western United States, where the only representative, as far as known, lives upon a species of *Larrea* that grows profusely over much of that arid region.

1. **Clematodes larreæ,** Scudder. (Tab. IV. figg. 1, ♂; 2, ♀.)

Clematodes larreæ, Scudd. Journ. N. York Ent. Soc. viii. pp. 213, 214 (1900) [1].

Hab. North America, New Mexico [1].—Mexico, Villa Lerdo in Durango, Comancho in Zacatecas (*L. Bruner*).

In some of its characteristics this insect reminds one of the different members of the Pyrgomorphid-genus *Calamacris* (*Atyphoscirtus*), which occurs in similarly dry places. It also bears a strong resemblance to the African and Madagascar genus *Geloius*, several species of which are known from the arid regions of those countries.

VILERNA, Stål.

Acridium in part.

Vilerna, Stål, Recens. Orthopt. i. pp. 38, 71 (1873); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 47 (1898).

The genus *Vilerna* includes a number of medium-sized, more or less rugose, brownish locusts that inhabit Tropical-American countries from Central Mexico to Northern Argentina. Some of the so-called species merge into one another to such an extent as to render their separation somewhat difficult and uncertain. Two or three of them belong to our region.

Synopsis of the Species of Vilerna.

A[1]. Tegmina and wings fully developed, as long as (♀) or longer than (♂) the abdomen.

b[1]. Larger (length, ♂ 20, ♀ 28 mm.). Greyish-fuscous, the sides of the head back of eyes and upper half of deflexed lobes of the pronotum strongly piceous . . . . . 1. *æneo-oculata*, De G.

b[2]. Smaller (length, ♂ 17, ♀ 24 mm.). Brunneo-ferruginous, the sides of head and upper half of sides of pronotum lightly infuscated . . 2. *pygmæa*, Sauss.

A[2]. Tegmina and wings greatly abbreviated, lobiform, and lateral . . . 3. *reducta*, Brunner.

1. **Vilerna æneo-oculata,** De Geer.

Acrydium æneo-oculatum, De G. Mém. iii. p. 502, t. 42. fig. 11 (1773)[1]; Ed. Goeze, iii. p. 327, t. 42. fig. 11 (1780)[2].

Vilerna æneo-oculata, Stål, Recens. Orthopt. i. p. 71 (1873)[3]; Bruner, Ohio Naturalist, vii. p. 13 (1906)[4].

Acridium sanguinipes, Oliv. Enc. Méth., Ins. vi. p. 231, no. 69 (1791)[5].

Calliptamus sanguinipes, Serv. Rev. Orthopt. p. 93 (1831)[6].

Hab. Mexico, Yucatan (*Gaumer, coll. L. Bruner*); Guatemala[5]; Costa Rica (*M. A. Carriker, L. Bruner*); Panama, Darien (*Giglio-Tos, coll. S. H. Scudder*). — South America[1–4], Trinidad; West Indies, Grenada and St. Vincent.

Specimens of this insect coming from the vicinity of the Isthmus of Panama and from Guatemala are somewhat more robust and have shorter wings than those obtained from the West Indies and the adjoining portions of South America. In this respect they approach the females of the next species.

2. **Vilerna pygmæa,** Saussure. (Tab. III. figg. 22, ♂; 23, 23 *a*, ♀.)

Xiphicera pygmæa, Sauss. Rev. Mag. Zool. 1861, p. 156[1]; Orthopt. nov. Amer. ii. p. 6 (1861)[2]; Walk. Cat. Dermapt. Salt. Brit. Mus. iii. pp. 520, 597 (1870)[3].

Vilerna pygmæa, Bruner, in litt.

Hab. Mexico[1–3], Vera Cruz (*Rev. Heyde*), Cordova (*L. Bruner*), Orizaba (*L. Bruner and H. Osborn*).

This species was found to occur in and about the margins of forests, where it could be taken among the fallen leaves and on the trunks of trees near the ground. Saussure's type, which is in the collection of the Geneva Museum, has been examined by the present author. It was obtained at Orizaba.

3. **Vilerna reducta,** Brunner.

Vilerna reducta, Brunn. Berl. ent. Zeitschr. xlv. p. 256, t. 3. figg. 2, 2 *a* (1900)[1].

Hab. Colombia, La Dorada on the middle Rio Magdalena[1].

This insect most likely occurs further to the northward along the Isthmus, at least into Southern Costa Rica *.

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* APTOCERAS, gen. nov.

Related to *Vilerna* and *Caletodes*, but differing from both of them in the more acuminate fastigium of the vertex, the longer, somewhat nodulose antennæ, the slightly shorter hind femora, and the narrower tegmina. The most noticeable feature, however, in the single species at hand, is a cluster of small, prominent, pearly granules or papillæ on the metapleura and outer face of the hind femora.

1. **Aptoceras margaritatus,** sp. n.

A medium-sized locust, with sub-horizontal acuminate vertex and heavy nodulose antennæ, narrow, somewhat abbreviated tegmina and wings, and a cluster of small pearly spots on the meso- and metapleura, as well as on the outer face of the hind femora.

Head slightly wider than the front edge of the pronotum, the occiput short and slightly ascending; eyes large, prominent, a little longer than broad, separated above by a space equal to the width of the frontal costa between the base of the antennæ; vertex somewhat ascending anteriorly, a little longer than its greatest width, sulcate from a point in front of the occiput where the median carina of the latter terminates, this sulcature bordered on the sides by a pair of heavy blunt carinæ that diverge anteriorly to a point midway between the front edge of the eyes and the apex of the fastigium and opposite lateral acuminate lobes, these latter giving to the fastigium a tricuspidate appearance. Frontal costa very prominent between the antennæ, viewed laterally rounded; broadly and quite deeply sulcate to the ocellus, below which point it is nearly obliterated—being represented only by two or three pairs of elongate nodules arranged down the middle of the face. Lateral or facial carinæ more or less interrupted, but parallel. Face viewed in profile broadly concave. Clypeus and labrum moderately large, quadrilobate; palpi very heavy, the apical joint somewhat depressed, oval. Antennæ 14- or 15-jointed, nearly as long as the hind femora, very coarse and nodulose, the basal joints somewhat depressed. Pronotum rugose, a little broader behind than in front, without lateral carinæ, but furnished on the upper edge of the lateral lobes with a rather large protuberance on each side between the hind and middle transverse sulci, a second and smaller one in advance of the middle sulci and lower down, while a still smaller one is present on each side of the disc a short distance back of the anterior edge; the median carina is transformed into a series of four elongate tubercles; anterior edge very broadly rounded, hind margin also rounded, but with the centre of the disc angularly produced, the angle slightly obtuse. Tegmina and wings somewhat abbreviated, the former rather narrow, with prominent longitudinal veins and but few cross-veins, their apices rounded; wings infuscated. Hind femora slightly surpassing the tip of the abdomen, moderately robust on the basal half, more slender beyond; the carinæ decidedly serrate, the upper edge and outer face irregularly studded with tubercles, a few of those on middle of outer disc larger and pearl-like in appearance, suggesting a possibility of luminosity at night. Hind tibiæ six-spined externally. Male-abdomen slender, the apex tapering, entire; supra-anal plate elongate-triangular, the sides undulate, slightly upturned, the disc provided with a series of dusky tubercles; cerci pyramidal, hairy, the tip of abdomen also rather strongly hirsute. Prosternum elongate, the spine located near its front edge, rather robust, directed slightly to the rear.

General colour dark wood-brown, varied on the head, pronotum, tegmina, and hind femora with dark brownish-olive and black. Abdomen largely rufous, inside and lower sulcus, together with the hind tibiæ and tarsi, coral-red. Antennæ with joints 9–11 white, 1–4 olivaceous, remainder dull black. Hind femora with two oblique dusky bars across their outer face and upper edge. Metapleura and outer disc of hind femora adorned with pearly tubercles, which are very conspicuous on the dark background.

Length of body, ♂, 19–20; of antennæ 9·25, of pronotum 4·5, of tegmina 10, of hind femora 10·75 millim.

Hab. British Guiana, Bartica, Demerara (*R. J. Crew, in coll. L. Bruner*).

Two males. While it is only a surmise on the part of the present writer, it may prove to be a fact that

LEPTOMERINTHOPHORA, Rehn.

Leptomerinthophora, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 436.

This genus seems to be more closely related to *Vilerna*, Stål, than to any other of the group. It contains several forms, of which *L. brevipennis*, Rehn, is the type. The species before me all inhabit Costa Rica. They may be recognized by the following brief table :—

Synopsis of the Species of Leptomerinthophora.

A¹. Hind femora dull clay-colour or brunneo-testaceous, either plain or marked with oblique fuscous bands and mottlings.
  *b*¹. Femora plain, tinged with green . . . . . 1. *brevipennis*, Rehn.
  *b*². Femora obscurely marked externally with oblique and internally with transverse bands ; antennæ inconspicuously annulate . . . . . 4. *modesta*, sp. n.

A². Hind femora green or greenish, unadorned, apex testaceous. Antennæ pale, annulate.
  *b*¹. Most of face, cheeks below the eyes, and pale lines on pronotum, pleura, and tegmina bright wax-yellow. [East slope near base of Mt. Irazu, Costa Rica.] . . . . . 3. *flavovittata*, sp. n.
  *b*². Most of face, cheeks below the eyes, and pale lines on pronotum, pleura, and tegmina brownish-testaceous. [Pacific slope south-westerly.] . . . . . 2. *smaragdipes*, sp. n.

These insects are to be met with in the tangle of low vegetation that flourishes in somewhat open spaces and along the edges of the denser forests. In habit they are somewhat sluggish, but when disturbed are capable of making long leaps. Their coloration is protective and renders them difficult of detection when at rest among the fallen leaves and low-growing herbage.

1. **Leptomerinthophora brevipennis,** Rehn.

Leptomerinthophora brevipennis, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 437–439, figg. 32, 33 [1].

Hab. Costa Rica, Pozo Azul [1].

This species is not represented among the material at hand, and has not been seen by me. The insect may be rare and rather local in its distribution, since Mr. Carriker, who collected for me in the same region, failed to secure specimens of it.

2. **Leptomerinthophora smaragdipes,** sp. n.

Head as wide as the front edge of the pronotum, with the occiput short, only gently inflated, and provided with a median, though faint, longitudinal carina which is most apparent anteriorly. Eyes large and

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this insect is nocturnal in its habits and that the pearly granules or follicules, which adorn the metapleura and hind femora, are phosphorescent. Should this be true, it would certainly be interesting in the extreme. The insect, on this account, may prove to be much more widely distributed and should reach the Isthmus of Panama.

prominent, almost equally broad and rounded above as below, separated by a space equal to (♂) or a very little more than (♀) the diameter of the basal antennal joint; the fastigium sub-acuminate, shallowly sulcate, about as long as its basal width. Frontal costa prominent and roundly produced between the antennæ, much reduced at the ocellus and below, continuous to the clypeus and shallowly sulcate. Antennæ moderately slender as compared with those of *Vilerna*, feebly nodulose, only a few of the sub-basal joints somewhat flattened, nearly as long as the head and pronotum combined. Pronotum rather coarsely and closely punctate, but most profusely so on the hind lobe, the sides slightly bulging; the median carina prominent, severed by all three of the transverse sulci; anterior edge broadly rounded, the posterior margin sub-angulate. Tegmina tapering, their apices acuminately rounded, nearly (♀) or quite (♂) one-half the length of the abdomen, their posterior edges overlapping. Hind femora moderately robust and elongate, about reaching (♀) or surpassing (♂) the tip of the abdomen approximately one-fourth of their length. Supra-anal plate provided on its disc with a number of dark granules or nodules, which are arranged in series.

Disc, upper two-thirds of sides of pronotum, upper part of the face and frontal costa below the ocellus, a triangular patch on occiput, sides of head back of eyes, most of tegmina, and pleura and antennæ light chocolate-brown; eyes castaneous; abdomen above brunneo-testaceous; greater portion of face, fastigium, two posterior diverging bands on occiput, cheeks below the eyes, lower edges of lateral lobes and outer lateral margins of disc of pronotum, dorsal angle of tegmina, and an oblique dash on pleura in advance of each middle and hind coxa, flavo-testaceous. Legs greenish-olive, becoming paler towards their base, at knees, and on the tarsi. Antennæ with a well-marked pale annulation near the apex and two or three much fainter ones basally. Venter pale, with a greenish tinge on meso- and metathorax.

Length of body, ♂ 17, ♀ 24; of pronotum, ♂ 3·35, ♀ 6·1; of tegmina, ♂ 6·4, ♀ 7; of hind femora, ♂ 10·5, ♀ 13; of antennæ, ♂ ♀, 8 millim.

Hab. COSTA RICA, Pozo Azul (*M. A. Carriker*).

The collection at hand contains several specimens of both sexes. They differ conspicuously from *L. brevipennis*, Rehn, in the colour of the legs, though the colour-pattern of the paler portion of the head and thorax is similar in the two species.

3. **Leptomerinthophora flavovittata**, sp. n.

Very similar to the preceding species, but differing from it in being a little more slender in build, in having the fastigium of the vertex rounded, instead of triangulate, the antennæ a little shorter, and the eyes less prominent, a trifle more oblique and somewhat narrowest above. The colour contrasts are also much more pronounced in the present species than in the one to which it has just been compared: the pale lines are broader and more conspicuous, being of a pale yellow or cream-colour; the legs are also paler green, and have the apex of the hind femora and the base of the tibiæ testaceo-ferruginous.

Hab. COSTA RICA, Juan Viñas (*L. Bruner*).

At first glance *L. flavovittata* recalls some of the short-winged forms of the genera *Melanoplus* and *Dichroplus*. It seems to be confined in its distribution to the eastern or Atlantic slope, while the other three mentioned in this paper belong to the Pacific side of the country.

4. **Leptomerinthophora modesta**, sp. n.

Closely related to the *L. brevipennis*, Rehn, but recognizable by its distinctly banded hind femora and by the very obscure pale markings on the head, thorax, and tegmina. It is also more rugose than any of the other species, and lacks all green or greenish tints in its coloration.

Length of body, ♂ 15, ♀ 22; of pronotum, ♂ 4, ♂ 5·1; of tegmina, ♂ 4·5, ♀ 6·5; of hind femora, ♂ 9·5, ♀ 12; of antennæ, ♂ 6, ♀ 7 millim.

Hab. COSTA RICA, Monte Redondo (*L. Bruner*).

This insect was found sparingly among fallen leaves, ferns, &c., along a small stream at the borders of a prairie-tract or open glade in March.

SYLETRIA, Rehn.

Syletria, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 433.

The present genus bears a very striking resemblance to *Abila*, Stål, in the general form of its body and wings, but a closer examination shows it to be distinct. The narrow vertex and pronotal characters of *Syletria* place it in a different section of the subfamily from the one containing *Abila*. Only a single species is known.

1. **Syletria angulata,** Rehn.

Syletria angulata, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 433–436, figg. 30, 31 [1].

Hab. COSTA RICA, Carrillo [1].

NICARCHUS, Stål.

Nicarchus, Stål, Syst. Acrid. i. p. 34 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 47 (1898).

The genus *Nicarchus* is based on a single species of short-winged locusts found in Tropical America. It apparently is somewhat related, or at least bears a resemblance, to *Leptomerinthophora*, Rehn.

1. **Nicarchus erinaceus,** Stål.

Nicarchus erinaceus, Stål, Syst. Acrid. i. pp. 78, 79 (1878) [1].

Hab. PANAMA [1].

Not contained in the material studied, and unknown to the present writer.

OMMATOLAMPIS, Burmeister.

Ommatolampis, Burm. Handb. Ent. ii. pp. 636, 637 (1838); Sauss. Rev. et Mag. Zool. 2e sér. xi. p. 393 (1859); Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 35 (1878); Syst. Acrid. i. p. 35 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 48 (1898).

The genus *Ommatolampis*, as at present restricted, contains apterous or subapterous locusts of medium size. In their distribution these insects are confined to the tropical portions of both North and South America. They are rather obscure in colour, and evidently occur in shady places among the fallen leaves of groves and forests. The species do not appear to be abundant in individuals, or else their habits are such as not to attract the attention of the ordinary collector of insects.

Synopsis of the Species of Ommatolampis.

A[1]. Tegmina present but short, the disc marked with a large black eye-like spot; antennæ dark, unicolorous, except at tip, where they are pale . . . . . [1. *perspicillata*, Linn.]

A[2]. Body apterous; the antennæ alternately pale and dark coloured . 2. *annulicornis*, sp. n.

[1. **Ommatolampis perspicillata**, Linn.

Gryllus (*Locusta*) *perspicillatus*, Linn. Syst. Nat. ed. 12, ii. p. 703 (1767) [1].

Gryllus perspicillatus, Fabr. Ent. Syst. ii. p. 62 (1793) [2].

Ommatolampis perspicillata, Burm. Handb. Ent. ii. p. 637 (1838) [3]; Sauss. Rev. et Mag. Zool. 1859, pp. 393, 394 [4].

Hab. British Guiana (*coll. L. Bruner*); Brazil [1–4].

This insect, which is very well represented by Stoll in his "Répr. Spectres, etc.," on plate 8 *b*. fig. 28, is a typical species of the genus. It may occur in the extreme southern portion of the Isthmus of Panama.]

2. **Ommatolampis annulicornis**, sp. n.

A medium-sized, dark brown, entirely apterous, somewhat fusiform locust, with alternately dark- and light-ringed joints to the antennæ, and the basal half of the abdomen largely pitchy-black at the sides. Front, lower portion of cheeks, pronotum, meso- and metathorax, and basal abdominal segments rugosely punctate.

Head no broader than, or scarcely as wide as, the front edge of the pronotum, viewed laterally rather oblique; vertex a little narrower than the diameter of the first antennal joint, somewhat depressed anteriorly and narrowly sulcate, the groove continuous with that of the elongate-triangular fastigium where the sulcation widens and deepens, the fastigium nearly horizontal; frontal costa prominent between the antennæ, about as broad as the vertex between the eyes, sulcate throughout, becoming very much weaker below the ocellus. Antennæ filiform, of moderate length, brownish-testaceous at the base, gradually darkening beyond, with several pale annuli, the basal annuli testaceous, the apical ones whitish. Pronotum gradually expanding posteriorly, all three carinæ very faint, the hind lobe short, not quite half as long as the anterior lobe, only the last transverse sulcus profoundly impressed; anterior edge sinuose, posterior edge truncate, gently and roundly emarginate at the centre. Auditory apparatus small and nearly circular, situated low down and close to the posterior edge of the tergite. Hind femora rather slender and reaching a little beyond the tip of the abdomen, the dorsal carina only slightly dentate; hind tibiæ 6-spined externally, 8-spined internally, the tarsi normal. Mesosternal lobes separated by a subquadrate space that is wider than long and a little greater than the width of the lobes themselves. Prosternal spine acuminate, straight, of moderate length. Terminal joints of the palpi pale, those of the maxillary pair strongly depressed, elliptical. Valves of ovipositor short, strongly hooked.

Eyes brassy, occiput, dorsum of abdomen, and disc of pronotum a little paler than elsewhere, the black patch on the sides of the abdomen crenulate above. Hind tibiæ deep brown.

Length of body, ♀ 29; of pronotum 5, of hind femora 17 millim.

Hab. Costa Rica, Pozo Azul (*M. A. Carriker*, *coll. L. Bruner*).

A single female. Other species of the genus will undoubtedly be found to occur north of the Isthmus of Panama.

[SITALCES, Stål.

Sitalces, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 16 (1878); Obs. Orthopt. iii. p. 16 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Univ. Torino, xiii. no. 311, p. 48 (1898).

The genus *Sitalces*, Stål, which is related to *Ommatolampis*, Burm., is composed of rather small to medium-sized locusts, which are either apterous or have the tegmina extremely rudimentary. In general colour the species thus far described are largely olivaceous or greenish-testaceous varied with ferruginous, browns, and black. The genus belongs to Tropical America, and especially to Middle and Northern South America, and it almost certainly extends to Panama. The annexed synoptic table will aid the student in determining the ten species already known or that are now at hand.

Stål's *S. volxemi* may be considered the type of the genus.

Synopsis of the Species of Sitalces.

A¹. Larger species (length, ♀ ♀, 18–23 mm.). Hind tibiæ furnished with 7 or 8 spines on the outer carina.
  *b*¹. Tympanum or auditory apparatus obsolete or subobsolete.
    *c*¹. Tubercle of the prosternum very obtuse, only slightly elevated, the apex armed with an erect spine.
      *d*¹. Smaller (length, ♂ 14, ♀ 20 mm.). General colour olivaceous-green. Median carina of the pronotum subobliterated . . . *volxemi*, Stål.
      *d*². Larger (length, ♂ 15, ♀ 23 mm.). General colour brownish-olive. Median carina of the pronotum well-defined throughout. [Brazil.] *robustus*, Bruner.
    *c*². Tubercle of the prosternum more elevated, pyramidal or acuminate, without the erect spine. Apterous. [Venezuela.] . . . . . 1. *coxalis*, Stål.
  *b*². Tympanum or auditory apparatus apparent, nearly or quite normal.
    *c*¹. Hind tibiæ 7-spined externally . . . . . *vittiventris*, Stål.
    *c*². Hind tibiæ 8-spined.
      *d*¹. Face almost impunctate. [Isl. of Trinidad.] . . . . . 3. *trinitatis*, Bruner.
      *d*². Face distinctly punctate. [Venezuela.] . . . . . 2. *punctifrons*, Stål.

A². Smaller species (length, ♀ ♀, 14–15 mm.). Hind tibiæ provided with but six spines in the outer row.
  *b*¹. Tegmina wanting. Apex of hind femora infuscated. [Santarem.] . *nudus*, sp. n.
  *b*². Tegmina present. Hind femora at most with a dark prægenicular annulus.
    *c*¹. Tegmina narrow, at least four times as long as broad, bicoloured, extending beyond the apex of metathorax. [Brazil?] . . . . *varipennis*, sp. n.
    *c*². Tegmina broader, suboval, about twice as long as extreme width, scarcely reaching the middle of metathorax.
      *d*¹. Median carina of pronotum but little interrupted by the transverse sulci; dorsum plainly vittate with flavous. [Brit. Guiana.] . . 4. *ovatipennis*, sp. n.
      *d*². Median carina widely interrupted by the transverse sulci; dorsum almost uniformly infuscated. [Chapada, Brazil.] . . . . . *infuscatus*, sp. n.

1. **Sitalces coxalis,** Stål.

Sitalces coxalis, Stål, Bih. till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 18 (1878) [1]; Obs. Orthopt. iii. p. 18 (1878) [2].

Hab. VENEZUELA, Caracas [1 2].

While no material is at hand from regions closer than the type locality, Caracas, this and the following species are included as possible denizens of Central America.

2. **Sitalces punctifrons,** Stål.

Sitalces punctifrons, Stål, Bih. till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 18 (1878) [1]; Obs. Orthopt. iii. p. 18 (1878) [2].

Hab. VENEZUELA, Caracas [1 2].

3. **Sitalces trinitatis,** Bruner.

Sitalces trinitatis, Bruner, Journ. N. York Ent. Soc. xiv. p. 155 (1906) [1].

Hab. TRINIDAD [1].

4. **Sitalces ovatipennis,** sp. n.

A rather small, dark-coloured insect above, with short oval tegmina. Hind tibiæ 6-spined in outer row. Body sparsely hirsute throughout.

Head rather wider than the front edge of the pronotum, the occiput of ♂ at least slightly ascending; face greatly (♂) or moderately (♀) oblique; eyes large and prominent in the ♂, a little less so in the ♀; vertex between the eyes of ♂ very narrow, only about one-half as wide as the frontal costa between the base of the antennæ, that of the ♀ a little wider; fastigium somewhat depressed, shallowly sulcate, slightly broader than long. Frontal costa prominent above the ocellus, plane, with a few coarse punctures at its upper extremity; at the ocellus and below less prominent, below the ocellus suddenly narrowed to the transverse facial groove, from which point it broadens and continues to the clypeus, at the ocellus and below gently sulcate. Antennæ somewhat coarse, filiform, in the ♂ a trifle longer, in the ♀ less, than the head and pronotum combined. Pronotum slightly widening behind, coarsely punctate, much more closely so on the hind lobe; the transverse sulci profound, the posterior one alone severing the median carina; anterior margin rounded, with the centre shallowly, arcuately emarginate, hind margin angulately emarginate. Dorsum of meso- and metathorax, along with that of the first abdominal segment, profusely and coarsely punctate (♂), or sparsely and shallowly so (♀). Tegmina small, short, oval, reaching to about the middle of the metathorax. Auditory apparatus almost entirely obliterated. Hind femora somewhat robust, in the ♀ about reaching the tip of the abdomen, in the ♂ extending beyond it one-third their length. Prosternal spine broadly pyramidal, the apex acuminate. Last ventral segment of ♂-abdomen short, the apex entire, the outer or apical third provided with a strong median carina; supra-anal plate elongate-triangular, with coarse elevated borders, the outer half bent downwards, the transverse ridge thus formed narrowly sulcate. Cerci little longer than the supra-anal plate, tapering and curved inwards on the distal half.

General colour of head, thorax, and base of abdomen dark brown, almost black, on the pleura and abdomen apically brownish-olive, below greenish-yellow; legs olivaceous, the tibiæ and tarsi deep bottle-green; face, lower edges of pronotum, and a line on the pleura flavous. The face above the base of the antennæ is provided with a shiny black band running from eye to eye and taking in the apex of the fastigium; a second black mark occurs on the occiput just back of the centre of the upper edge of the eyes. In the ♀ there is a yellowish border to each side of the occiput that continues upon the lateral edges of the disc of the pronotum and upper half of the tegmina, while a third line of this colour follows the median carina of the pronotum and continues over the middle of the abdomen nearly or quite to its tip. In the ♂ the

lateral vittæ are usually obliterated, leaving only the dorsal one. Antennæ greenish, becoming darker apically, the two basal joints yellowish. Genicular portion of hind femora tinged with rufous, without black or fuscous marks.

Length of body, ♂ 12, ♀ 14; of pronotum, ♂ 2·25, ♀ 2·90; of tegmina, ♂ 1, ♀ 1; of hind femora, ♂ 7·5, ♀ 8·65 millim.

Hab. British Guiana, Demerara (*R. J. Crew, in coll. L. Bruner*), Bartica (*J. A. G. Rehn, in coll. Philad. Acad. Nat. Sci.*).

Eleven males and eleven females.

5. **Sitalces** sp.

Sitalces sp., larva, Brunner, Berl. ent. Zeitschr. xiv. p. 256 (1900)[1].

Hab. Colombia, Barranquilla[1].

This may be the nymph of one of Stål's species, *S. punctifrons* or *S. coxalis*, or it may belong to either *S. trinitatis*, Bruner, or the *S. ovatipennis* of British Guiana described above.]

[ŒDOMERUS, gen. nov.

The representatives of the present genus may be recognized by their broad and robust hind femora, with the lower carina very prominent and broadly arcuate, the narrow sulcate vertex, the more than usual oblique face, the fairly robust and somewhat depressed body, the lateral, almost linear tegmina, and the coarse more or less transverse prosternal spine. The hind tibiæ are 7-spined in the outer row. Interspace between the mesosternal lobes quadrate (♀), or slightly longer than wide (♂). Pronotum almost without a median carina, the transverse sulci deeply impressed, the hind lobe less than one-half as long as the anterior one, its posterior margin sinuose, widely emarginate in the middle.

The two species inhabit Lower California.

1. **Œdomerus corallipes,** sp. n. (Tab. IV. figg. 10, 10 *a*, ♂; 14, 14 *a*, ♀.)

A brownish-testaceous insect, with the tegmina lateral and sublinear, the hind femora exceedingly robust, and the hind tibiæ 7-spined and red. Viewed laterally, the face is moderately oblique and the dorsum of the pronotum gently arcuate, as is also the region of the junction of the thorax and abdomen. Pronotum, pleura, and dorsum of the abdominal segments rather coarsely punctate, the surface between glabrous.

Head about as wide as the front edge of the pronotum, subquadrate, possibly a little higher than broad; the occiput short, only gently rounded; the vertex between the somewhat prominent eyes rather narrow, about as broad as the diameter of the basal antennal joint, the fastigium depressed, rather deeply sulcate, separated from the frontal costa by a roundly elevated portion of the latter; frontal costa prominent above the ocellus, less so below, broadest between the antennæ, not sulcate, the surface moderately closely and coarsely punctate, the pits infuscated; antennæ filiform, not quite as long as the head and pronotum taken together. Pronotum rounded above, considerably expanding from front to rear, the transverse sulci continuous, the hind one the most profound; the median carina only apparent by the slight interruption of the punctures anteriorly; the anterior edge strongly margined and somewhat sinuose, its middle a little advanced upon the occiput, hind margin also sinuose, mesially arcuate-emarginate. Tegmina lateral, sublinear, five or six times as long as broad, reaching nearly or quite to the hind margin of the first abdominal segment, the background fuscous, the veins testaceous. Auditory apparatus present, of moderate size. Hind femora about reaching the tip of the abdomen. Valves of the ovipositor not exserted, slender, the upper pair rather strongly hooked, the lower pair but little hooked and furnished with a prominent basal tooth. Prosternal spine rather short and coarse, transverse.

General colour ferrugineo-testaceous, more or less conspersed and marmorate with fuscous. Occiput and sides of head back of the eyes and lateral lobes of the pronotum marked with piceous. Hind femora externally, above, and internally faintly banded with dull fuscous. Abdomen and front and middle legs conspersed and marmorate with dark cinereous, brown, and dull black; lunules of the genicular portion of the hind femora piceous, hind tibiæ on upper face and apically, along with the two basal joints of the tarsi, coral-red, below basally testaceous strongly conspersed with fuscous.

Length of body, ♀, 20; of pronotum 5·15, of tegmina 4, width of tegmina 0·9, length of hind femora 11, of hind tibiæ 9 millim.

Hab. Lower California, San José del Cabo (*D. Haines, in coll. Calif. Acad. Nat. Sciences*).

A second specimen, also female, is at hand from the same locality. This latter has been preserved in alcohol and shows a greater amount of mottling than does the one described above. It also has proportionately shorter tegmina, which are less profusely veined. It may, therefore, represent a distinct species.

2. **Œdomerus nigropleurus,** sp. n.

Apparently of about the same size as *Œ. corallipes*, but differing from it in having the anterior margin and the greater portion of the sides of the pronotum, along with the pleura of the meso- and metathorax, and the lunules of the genæ of the hind femora, black or dark piceous. The tegmina are shorter and broader and also largely included in the dusky area of the sides of the thorax. Otherwise the general colour is dull testaceous. The pronotum viewed laterally is less arcuate than in the species above mentioned, and has the transverse sulci straight (instead of gently sinuose), and there are decided indications of a median carina, both on the hind lobe and in front.

Length of body, ♂, 20; of pronotum 4·75, of tegmina 3·25, of hind femora 10·25 millim.

Hab. Lower California, in the vicinity of Cape St. Lucas (*Palmer, in coll. U.S. Nat. Mus., ex Scudder*).

This insect has also been preserved in alcohol and is without antennæ. The sub-anal plate is acuminate, short, upturned, and has the posterior edge strongly carinate, the apex entire. Supra-anal plate simple, triangulate; the preceding segment unarmed. Cerci simple, rather broad at the base, evenly tapering, acuminate.]

SCHISTOCERCA, Stål.

Schistocerca, Stål, Recens. Orthopt. i. p. 64 (1873); Scudd. Proc. Amer. Acad. Arts & Sci. xxxiv. no. 17, pp. 441–476; Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 49 (1898), &c.

The genus *Schistocerca* is typically American, and is composed of numerous species, several of which are migratory in habit and more or less destructive to cultivated vegetation. Representatives of the genus occur from Southern Canada in North America to midway between the Rio Colorado and Cape Horn at the southern extremity of South America, while several additional forms are also to be found on the adjacent islands of both the Atlantic and the Pacific oceans. Fully one-half of the known species have been reported as occurring in "Biologia" territory. As the genus

has been monographed within the past ten years *, no attempt will be made at present to treat it in a critical manner, although Scudder left it in a very unsatisfactory condition when we take into account some of the earlier-described forms. All the representatives, with but two or three exceptions, are large and showy, and a few are even gaudily coloured and very attractive. The following annotated list of species will give the reader some idea of their numbers and distribution in Mexico and Central America:—

1. **Schistocerca aurantia,** Scudd.

Hab. Mexico, Tepetlapa in Guerrero (*H. H. Smith*), Yucatan (*Scudder*); Nicaragua, Realejo (*Scudder*).

2. **Schistocerca carinata,** Scudd.

Hab. North America, California.—Mexico, Atoyac, Orizaba, Vera Cruz, &c. (*Godm. & Salv. Coll., Bruner, Scudder, &c.*).

3. **Schistocerca columbina,** Thunb.

Schistocerca columbina, Baker, Invert. Pacif. i. p. 77 [1].

Hab. Mexico, San Mateo del Mar, Tehuantepec; Guatemala; Nicaragua [1]; Costa Rica; Panama.—South America, Colombia to Peru, Trinidad; West Indies, Martinique, Grenada, St. Vincent.

4. **Schistocerca crocotaria,** Scudd.

Hab. Nicaragua, Chontales, Realejo (*McNeil; coll. L. Bruner*).

5. **Schistocerca camerata,** Scudd.

Hab. Mexico, Sinaloa (*Scudder*), Tacubaya, Distrito Federal (*Rehn*).

6. **Schistocerca mellea,** Scudd.

Hab. Mexico, Vera Cruz (*Heyde, coll. L. Bruner*), Yucatan (*Gaumer*).

7. **Schistocerca zapoteca,** Scudd.

Hab. Mexico; Guatemala; Costa Rica.—South America.

A somewhat variable insect and probably one of Walker's undeterminable species. Many specimens were examined by Scudder.

8. **Schistocerca vaga,** Scudd.

Hab. North America, Southern States; Lower California.—Mexico, Sonora, Coahuila, Tamaulipas, &c. (*Scudder*), Jalisco, Mexico City (*Schumann*), Chilpancingo in Guerrero (*H. H. Smith*); Nicaragua, Realejo (*Scudder*).

* Scudder, Samuel H., "The Orthopteran Genus *Schistocerca*," Proc. Amer. Acad. Arts & Sci. xxxiv. no. 17, March 1899, pp. 441–476.

[9. **Schistocerca simulatrix,** Walk.
Hab. WEST INDIES, San Domingo, Bahamas, &c.]

10. **Schistocerca pyramidata,** Scudd.
Hab. MEXICO, Cuernavaca in Morelos (*coll. L. Bruner*); COSTA RICA, &c. (*Bruner, Rehn*).

[11. **Schistocerca flavofasciata,** Thunb.
Hab. BRITISH GUIANA (*coll. L. Bruner*).

This insect will surely be taken within "Biologia" territory.]

12. **Schistocerca maya,** Scudd.
Hab. MEXICO, "Venis Mecas," San Mateo del Mar, Tehuantepec (*Scudder*).

Not recognized among the material studied.

[13. **Schistocerca gulosa,** Scudd.
Hab. BRITISH GUIANA (*Scudder*).

It should be looked for also in the West Indies.]

14. **Schistocerca bogotensis,** Scudd.
Hab. COLOMBIA, Bogota.

Undoubtedly also in Panama.

15. **Schistocerca inscripta,** Walk.
Hab. WEST INDIES, Jamaica (*coll. L. Bruner*).

I have seen a spirit-specimen (♂) labelled "Tepic, Mexico" (*coll. Calif. Acad. Sci.*) that I am also inclined to place here.

16. **Schistocerca rubiginosa,** Harris.
Hab. NORTH AMERICA, Southern and Eastern States.—MEXICO, Yucatan (*Scudder*); GUATEMALA (*Scudder*).

17. **Schistocerca sonorensis,** Scudd.
Hab. MEXICO, Sonora (*Scudder*).

18. **Schistocerca alutacea,** Harris.
Hab. NORTH AMERICA, Southern and Eastern States.—MEXICO, "Sierra Nola" (*Scudder*).

19. **Schistocerca obscura,** Fabr.

Hab. NORTH AMERICA, Southern States.—MEXICO, Durango or Sinaloa (*Forrer*), Sonora, Tamaulipas, Coahuila, Tepic, Vera Cruz, &c. (*Scudder*).

20. **Schistocerca lineata,** Scudd.

Hab. NORTH AMERICA, Texas, &c.—MEXICO, Montelovez in Coahuila (*Scudder*), Bolaños in Jalisco (*Rehn*).

21. **Schistocerca albolineata,** Thom.

Hab. NORTH AMERICA, Iowa, Idaho, Las Cruces, New Mexico, Grand Cañon, Arizona (*L. Bruner*).

Doubtless extends into Northern Mexico.

22. **Schistocerca venusta,** Scudd.

Hab. NORTH AMERICA, Oregon, Nevada, Utah, Arizona, Texas.—MEXICO, San Luis Potosi, Sierra de San Miguelito (*Scudder*).

23. **Schistocerca mexicana,** Scudd.

Hab. MEXICO, Sinaloa (*Scudder*).

24. **Schistocerca separata,** Scudd.

Hab. NICARAGUA, Chontales (*Underwood*); COSTA RICA, various localities, both near sea-level on the gulf coast and up to several thousand feet in the interior (*coll. L. Bruner*).

25. **Schistocerca malachitica,** Rehn.

Schistocerca malachitica, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 439 [1].

Hab. COSTA RICA, Turrialba (*Rehn*).

This insect is very likely synonymous with *S. separata.*

26. **Schistocerca shoshone,** Thom.

Hab. NORTH AMERICA, Idaho, Utah, Texas, &c.—MEXICO, Juarez, Chihuahua, and Sonora (*Scudder*).

27. **Schistocerca obliquata,** Scudd.

Hab. LOWER CALIFORNIA, San José del Cabo (*coll. Calif. Acad. Sciences*).—MEXICO, Chihuahua (*Morse*).

28. **Schistocerca peregrina,** Oliv.

Hab. MEXICO, Jalisco (*Schumann*); PANAMA (*Scudder*).—SOUTH AMERICA, Brazil, &c.

The specimen obtained by Schumann is not quite typical, but approaches rather closely to some of the African individuals that have been examined by the present writer. A migratory species occurring on both sides of the Atlantic.

29. **Schistocerca americana,** Drury.

Hab. NORTH AMERICA, generally, from Canada southward.—MEXICO, Tamaulipas, Morelos, Tepic, Vera Cruz, Yucatan, &c.; NICARAGUA, Chontales.—SOUTH AMERICA to Argentina; WEST INDIES.

This species is well represented among the material at hand—fully a dozen Mexican and Central-American localities being represented. It also shows a considerable amount of variation both in size and markings.

30. **Schistocerca piceifrons,** Walker.

Hab. MEXICO, Vera Cruz (*Rev. T. Heyde, in coll. L. Bruner*).

Several specimens from Vera Cruz seem to belong to this species. They remind one of a large, smooth, and very pale *S. americana*, in which the cheeks are strongly marked with piceous.

31. **Schistocerca pallens,** Thunb.

Hab. MEXICO, Vera Cruz and Yucatan (*Scudder*); NICARAGUA, Realejo (*Scudder*).—SOUTH AMERICA to Uruguay River; WEST INDIES, Cuba and San Domingo (*Scudder*).

32. **Schistocerca vittafrons,** sp. n.

In general appearance very similar to the different species of the *S. americana*-group, but differing from all the described forms in lacking the narrow longitudinal pale or whitish stripe on the middle of the lateral lobes of the pronotum, and also in having the face very markedly vittate with piceous and ferrugineo-testaceous.

General form slender; of medium size, and with the tegmina and wings extending considerably beyond the tip of the abdomen in both sexes. Head moderately large, plainly wider than the front edge of the pronotum; eyes somewhat prominent, elongate-elliptical, with the upper end a trifle angulate, longer than that portion of the cheeks immediately below them, separated above by a space somewhat narrower than their shortest diameter; fastigium gently depressed, broadly and shallowly sulcate; frontal costa plane above the antennæ and dotted with a few rather coarse punctures, at the ocellus and below deeply sulcate, the bounding carinæ strong and gently divergent beneath; lateral or facial carinæ sharp, somewhat arcuate at the middle and divergent below. Antennæ slender, in the ♂ nearly one-half as long as, and in the ♀ scarcely any longer than, the combined length of head and pronotum. Pronotum with the surface coarsely granulate and somewhat rugose, very gently and roundly tectate in front, nearly flat behind, the median carina well defined throughout, the three transverse impressed lines prominent; anterior margin broadly rounded, the hind edge of the disc produced into an obtuse angle, with the tip rounded. Tegmina sparsely but strongly reticulated. Hind femora slender, about reaching the tip of (♂), or somewhat shorter than (♀), the abdomen. Last ventral segment of male-abdomen normal. Cerci one-half longer than their basal width, a little tapering and rounded apically. Prosternal spine long, slender, curved to the rear and slightly surpassing the anterior edge of the mesosternum. Body below and legs rather profusely hirsute.

General colour ferrugineo-testaceous, streaked and mottled with brown, piceous, and black. Cheeks below the

eyes, lateral or facial carinæ, walls of frontal costa, sides of vertex and occiput, outer two-thirds of disc, and lateral lobes obliquely at middle of pronotum, together with the basal middle of tegmina, piceous, the latter heavily mottled on the disc with fuliginous maculations, due to the strong infuscation of the veins and enclosed areas. Hind femora without transverse bands, but provided with a series of prominent black dots along all the upper and outer carinæ, the lower half of the outer face whitish; hind tibiæ reddish-purple, the spines white tipped with black. Antennæ ferruginous, somewhat infuscated apically. Dorsal and costal fields of tegmina pale testaceous, in the males often cream-colour, immaculate.

Length of body, ♂ 40, ♀ 52; of pronotum, ♂ 8, ♀ 10; of tegmina, ♂ 40, ♀ 49; of hind femora, ♂ 22, ♀ 28; of antennæ, ♂ 14, ♀ 15 millim.

Hab. Costa Rica, Boruca (*M. A. Carriker*).

This is certainly one of the most strikingly marked and beautiful species of the genus. Mr. Carriker writes me that he took this insect in July, on open savannas, where it was not rare.

33. **Schistocerca damnifica,** Sauss.

Hab. North America, from the New England States to the Rio Grande, Texas.

It undoubtedly also enters Northern Mexico.

[MONACHIDIUM, Serville.

Gryllus, Linn. in part.
Acrydium, Oliv. in part.
Monachidium, Serville, Rev. Méth. Orthopt. p. 90 (1831); Stål, Syst. Acrid. i. p. 20 (1878); Brunner, Revis. Syst. Orthopt. p. 142 (1893); Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 49 (1898).

The present genus is introduced here simply because at least one species of it is very apt to be met with in some portion of the territory covered by the present publication.

1. **Monachidium lunum,** Linn.

Gryllus lunus, Linn. Syst. Nat. i. p. 693 [1]; Fabr. Ent. Syst. ii. p. 47 (1793) [2].
Acrydium lunum, Oliv. Encycl. Méth. vi. p. 216 (1791) [3].
Monachidium flavipes, Serv. Rev. Méth. Orthopt. p. 90 (1831) [4]; Brullé, Hist. Nat. Ins. Orthopt. ix. p. 223, t. 19. fig. 2 (1835) [5].
Gryllus (*Locusta*) *vexillatus,* Stoll, Répr. Spectres, etc. t. 22 *b*. fig. 84 (1813) [6].

Hab. Northern South America, Cayenne, Guiana.

This species would be the one to be looked for on the Isthmus of Panama.]

NETROSOMA, Scudder.

Netrosoma, Scudd. Proc. U.S. Nat. Mus. xx. pp. 9, 16 (1897).

The present genus is composed of medium-sized apterous or subapterous locusts that are confined to the subarid regions of Northern Mexico. Two species are known. They were characterized by Scudder in his "Revision of the Melanopli" (Proc. U.S. Nat. Mus. xx. 1897).

1. **Netrosoma fusiforme,** Scudd.

Netrosoma fusiformis, Scudd. Proc. U.S. Nat. Mus. xx. p. 17, t. 2. fig. 2 (1897) [1].

Hab. Mexico, Montelovez, Chihuahua [1].

2. **Netrosoma nigropleurum,** Scudd.

Pezotettix nigropleura, Bruner, MS.

Netrosoma nigropleura, Scudd. Proc. U.S. Nat. Mus. xx. p. 18, t. 2. fig. 3 (1897) [1].

Hab. Mexico, Villa Lerdo, Durango [1] (*coll. L. Bruner*).

This species was taken in and at the edges of thickets composed of rather rank vegetation near a watercourse.

DICHROPLUS, Stål.

Dichroplus, Stål, Recens. Orthopt. i. p. 78 (1873); Obs. Orthopt. iii. p. 6 (1878); Brunner, Revis. Syst. Orthopt. p. 145 (1893); Bruner, Proc. U.S. Nat. Mus. xxx. p. 677 (1906).

The genus *Dichroplus*, Stål, chiefly inhabits South America, where it is represented by numerous species, some of them varying considerably in size and in general appearance. At least five forms may be included in the present treatise. These can be separated as follows:—

Synopsis of the Species of Dichroplus.

A[1]. Tegmina and wings distinctly surpassing the tips of the hind femora.
  b[1]. Larger (length, ♀, 25 mm.). Sides of thorax and hind femora biannulate with yellowish . . . . . 1. *mexicanus,* Sauss.
  b[2]. Smaller (length, ♀, 15–18 mm.). Sides of thorax not yellow-banded.
    c[1]. Hind tibiæ bright coral-red, the tegmina generally conspersed with fuscous . . . . . 2. *punctulatus,* Thunb.
    c[2]. Hind tibiæ dull rufo-ochreous, the tegmina irregularly blotched with fuscous . . . . . 3. *morosus,* Rehn.
A[2]. Tegmina and wings not or scarcely passing the tip of the abdomen.
  b[1]. Interval between the mesosternal lobes of the female a little longer than wide . . . . . 5. *notatus,* sp. n.
  b[2]. Interval between the mesosternal lobes of the female decidedly wider than long . . . . . 4. *fuscus,* Thunb.

1. **Dichroplus mexicanus,** Sauss.

Pezotettix mexicana, Sauss. Rev. et Mag. Zool. 1861, p. 160 [1]; Thom. Acrid. N. Am. p. 222 (1873) [2].

Dichroplus mexicanus, Brunner, Berl. ent. Zeitschr. xlv. p. 257 (1900) [3].

Hab. Mexico [1 2].—Colombia [3].

Although I have seen specimens of a *Melanoplus* (*M. devastator*) labelled *Pezotettix mexicana*?, presumably by Saussure himself, Brunner von Wattenwyl, who must have examined the types, places Saussure's *P. mexicana* in *Dichroplus*. Saussure's remark concerning the variation of the colour of the hind tibiæ was undoubtedly based on this other insect which was erroneously included in his *P. mexicana*. The present species has not been recognized among the material studied by me or by Scudder when working on his Revision of the Melanopli.

2. **Dichroplus punctulatus,** Thunb.

Gryllus punctulatus, Thunb. Mém. Acad. St. Pétersb. ix. p. 408 (1824)[1].
Pezotettix (*Trigononymphus*) *punctulatus*, Stål, Recens. Orthopt. i. p. 77 (1873)[2].
Pezotettix (*Dichroplus*) *punctulatus*, Stål, Obs. Orthopt. iii. p. 6 (1878)[3].
Dichroplus punctulatus, Bruner, Locusts of Argent. p. 76, figg. 39, 40 (1900)[4]; Proc. U.S. Nat. Mus. xxx. p. 681, t. 38. figg. 3, 4 (1906)[5].

Hab. Mexico[5]; Costa Rica (*Biolley*), Monte Redondo (*L. Bruner*), Caché (*Rogers*). —South America[1–5].

This is the most widely distributed species of the genus, and, although quite variable as to size, robustness, and colour, is the most easily recognized on account of its red hind tibiæ and regularly conspersed tegmina.

3. **Dichroplus morosus,** Rehn.

Dichroplus morosus, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 442 (♀)[1], 805 (♂)[2].

Hab. Costa Rica, Monte Redondo[1], Tablazo[2].

I have not seen this species, as it is not contained in the material studied.

4. **Dichroplus fuscus,** Thunb.

Gryllus fuscus, Thunb. Mém. Acad. St. Pétersb. v. p. 235 (1815)[1].
Pezotettix (*Trigononymphus*) *fuscus*, Stål, Recens. Orthopt. i. p. 78 (1873)[2].
Pezotettix (*Dichroplus*) *fuscus*, Stål, Obs. Orthopt. iii. p. 6 (1878)[3].
Dichroplus fuscus, Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, ix. no. 184, p. 21 (1894)[4]; Brunner, Berl. ent. Zeitschr. xlv. p. 257 (1900)[5].

Hab. South America, Colombia, &c.[1–5].

D. fuscus doubtless extends northward into "Biologia" territory.

5. **Dichroplus notatus,** sp. n. (*Dichroplus mexicanus,* Tab. IV. figg. 16, 16 *a*, ♀.)

A rather small but moderately robust species in which the sexes are very unequal in size, and the tegmina and wings reach the apex of the abdomen, but fall short of the tip of the hind femora; the latter strongly and obliquely banded with black, the hind tibiæ fusco-plumbeous, with a dingy testaceous sub-basal annulus.

Head of ♀ deeper or higher than usual in the representatives of the genus (that of the ♂ nearly normal), a little wider than the front edge of the pronotum. Eyes large and prominent, slightly longer than the cheeks below them, their front edge straight (♀) or gently arcuate (♂), separated above in the ♀ by a space equal to, or in the ♂ by a little less than, the diameter of the basal antennal joint. Fastigium of the vertex strongly depressed and deeply sulcate; frontal costa fairly prominent, above somewhat wider than the narrowest part of the vertex, coarsely punctate, but not sulcate till near the ocellus and below where the sulcation is quite pronounced, the walls very gently divergent and reaching the clypeus. Antennæ filiform, a little longer than the head and pronotum together. Pronotum short, broad, with a faint median carina, lateral carinæ on the hind lobe only, the transverse sulci not strong, the posterior lobe perceptibly shorter than the anterior one, the hind angle of the disc obtuse. Tegmina narrow and gently tapering, their dorsal edges basally not touching or overlapping for a short distance back of the disc of the pronotum and leaving a wedge-shaped space of the abdomen uncovered, their apex rounded, coincident with the tip of the body. Anterior and middle femora, even of the ♂, but little enlarged, the hind pair moderately robust and surpassing the abdomen in both sexes by at least the length of the genicular portion. Hind tibiæ 9-spined on the outer carina. Prosternal spine retrorse, robust, short and transverse in the ♀, a little longer and more prominent in the ♂. Mesosternal lobes transverse, separated in the ♀ by a space wider than long, in the ♂ about as long as wide. Tip of the ♂-abdomen not enlarged, the last ventral segment about as long as broad at the base, the apex narrowed and indented at the centre so as to form a **U**-shaped depression; supra-anal plate triangular, with a rather prominent median sulcation on the basal half bounded by an apical transverse and strong lateral carinæ. Anal cerci slender, as long as the supra-anal plate, gently curved inwards. Valves of the ovipositor slender, curved, acuminate, the upper pair somewhat longest.

General colour above dull wood-brown, below testaceo-ferruginous. Sides of pronotum in front of last transverse sulcus with a well-defined piceous patch bordered above and below by testaceous; the disc is provided with a posteriorly narrowing black patch, which, in conjunction with the wedge-shaped uncovered area of the same tint between the basal portion of the pale-edged tegmina, gives to the insect a very striking appearance. Discal area of tegmina very strongly maculate with black, the dorsal and costal fields scantily and faintly conspersed with fuscous. Hind femora cinereo-testaceous, with the outer face marked near the base by a narrow, and across the middle and on the outer third by deep, black oblique bands; the upper edge to some extent and the genicular area in great part are also marked by the same tint; lower edge, sulcus, and portion of inner face faint coral-red.

Length of body, ♂ 13, ♀ 17·5; of pronotum, ♂ 3·35, ♀ 4·5; of tegmina, ♂ 8·5, ♀ 10·5; of hind femora, ♂ 8, ♀ 11·5 millim.

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*).

One male and two females.

PARADICHROPLUS, Brunner.

Paradichroplus, Brunn. Rev. Syst. Orthopt. p. 145 (1893); Scudd. Proc. U.S. Nat. Mus. xx. pp. 9, 18 (1897); Gig.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 50 (1898).

This genus is chiefly confined to South America, but two species are known from Mexico. Scudder has shown (*loc. cit.*) how these forms differ and has given an account of their distribution.

1. **Paradichroplus mexicanus**, Brunn.

Platyphyma mexicanum, Brunn. Verh. zool.-bot. Ges. Wien, 1861, p. 224[1]; Orthopt. Stud. p. 4 (1861)[2]; Walk. Cat. Dermapt. Salt. Brit. Mus., Suppl. v. 71 (1871)[3]; Thom. Rep. U.S. Geol. Surv. Terr. v. p. 224 (1873)[4].

Caloptenus mexicanus, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. pp. 682, 683 (1870) [5]; Thom. Rep. U.S. Geol. Surv. Terr. v. p. 227 (1873) [6].

Paradichroplus mexicanus, Brunn. Rev. Syst. Orthopt. p. 145 (1893) [7]; Scudd. Proc. U.S. Nat. Mus. xx. pp. 19, 20, t. 2. figg. 4, 5 (1897) [8].

Hab. Mexico [1–8], Volcan de Orizaba (*coll. L. Bruner*).

This species was observed by the present writer to be not uncommon among the grasses growing on the slopes near and above timber line. It was rather sluggish or inactive at the time (early in February), on account of the cloudy and cool weather that prevailed. In fact, within the next few hours eight inches and more of sleet fell on the mountain.

2. **Paradichroplus varicolor**, Stål.

Pezotettix varicolor, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, pp. 9, 10 (1878) [1].

Paradichroplus varicolor, Brunn. Rev. Syst. Orthopt. p. 145 (1893) [2]; Gig.-Tos, Zool. Jahrb., Abh. Syst. viii. p. 813 (1895) [3]; Scudd. Proc. U.S. Nat. Mus. xx. p. 21, t. 2. fig. 6 (1897) [4].

Hab. Mexico [4].—Colombia [4].

DASYSCIRTUS, gen. nov.

Apparently most nearly related to *Paradichroplus* than to any other of the North-American genera of the *Melanopli*, but differing from it in the points set forth in the synoptic table of genera (*anteà*, p. 217).

Body of ♂ strongly hirsute, especially below and on the apical half of the abdomen. The latter gently clavate and strongly upturned; the last ventral segment or sub-anal plate acuminate, viewed from above broadly rounded and with the immediate apex produced into a low rounded pyramid. Cerci broad at base, suddenly narrowed beyond to less than one-half their basal width, elongate, the apical half equal and bent inwards. Interspace between the mesosternal lobes nearly as broad as long. Hind femora slender, extending beyond the tip of the abdomen by the length of their genæ. Spines on the outer row of the hind tibiæ small, eight or nine in number.

1. **Dasyscirtus olivaceus**, sp. n.

Dirty olive-green above, paler beneath, the hind femora with the lower edge of the outer and inner faces, and the lower sulcus, bright coral-red, the hind tibiæ dark grey, with a purplish tinge towards the apex externally.

Head no wider than the front edge of the pronotum, the occiput short, rugose; eyes fairly prominent, a little longer than the cheeks below them, nearly straight in front, rounded behind, separated at the vertex by a space slightly less than the width of the frontal costa between the antennæ; the vertex rather deeply sulcate, the depression continuous with that of the frontal costa, the fastigium somewhat strongly depressed, considerably broader than long, rugose at the sides, roundly merging into the frontal costa; the latter prominent, its sides parallel, profoundly sulcate and coarsely punctate above; lateral or facial carinæ strong throughout, a little divergent below; [antennæ missing, but apparently rather coarse, as the two basal joints are moderately stout]. Pronotum evenly expanding posteriorly, without lateral carinæ, rugosely punctate, much more coarsely so on the anterior lobe, more profusely and less coarsely so on the hind lobe, gently tectate, the median carina strong, severed by all three transverse sulci, the hind one very pronounced and situated much behind the middle; anterior margin broadly rounded, the hind margin gently emarginate. Tegmina lateral, elliptical, less than twice as long as their greatest width, the veining coarse. Hind femora slender, extending considerably beyond the tip of the abdomen; the tibiæ 7- to 9-spined externally. Apex of ♂-abdomen a little enlarged, upturned, the last ventral

segment triangular and produced in the centre into a short finger-like projection. Supra-anal plate plain, roundly triangular, with a slightly undulate margin; no marginal apophyses of the preceding segment; male cerci broad at the base, but suddenly narrowed to less than half the basal width, directed upwards and roundly curved inwards, and ending in a narrow spatulate outwardly sulcate finger. Prosternal spine rather heavy, directed gently to the rear, the apex blunt. Prosternal lobes rounded internally, separated by a space a little narrower than long. Anterior and middle femora gently enlarged.

Length of body, ♂, 21; of pronotum 5, of tegmina 4·5, of hind femora 12 millim.

Hab. MEXICO, Cuernavaca in Morelos (*C. C. Deam*).

A single male, captured on January 4th. This insect is remarkably hairy and rugose.

PHÆDROTETTIX, Scudder.

Phædrotettix, Scudd. Proc. Amer. Acad. Arts & Sci. xxxii. no. 9, p. 196 (1897); Proc. U.S. Nat. Mus. xx. pp. 9, 22 (1897).

The present genus is confined to Northern Mexico and extreme Southern Texas, where, so far as our present knowledge goes, it is represented by a single wingless species.

1. **Phædrotettix angustipennis,** Scudd.

Pezotettix angustipennis, Bruner, MS.

Phædrotettix angustipennis, Scudd. Proc. U.S. Nat. Mus. xx. pp. 22, 23, t. 2. fig. 7 (1897) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 534 [2].

Hab. NORTH AMERICA, Corpus Christi Bay, Texas [1].—MEXICO, Mount Alvarez in San Luis Potosi [1], Camancho in Zacatecas [1], Victoria in Tamaulipas [2].

This little locust was quite plentiful in open, rather dry localities in the vicinity of Camancho, Zacatecas, where the present writer took it in November.

CONALCÆA, Scudder.

Conalcæa, Scudd. Proc. Amer. Acad. Arts & Sci. xxxii. no. 9, p. 196 (Jan. 1897); Proc. U.S. Nat. Mus. xx. pp. 9, 23 (1897).

Conalcæa, like the preceding genus of the group "Melanopli," is confined in its distribution to the arid regions of the extreme Southern United States and Northern Mexico. Several species are known. They may be separated by Scudder's table as published in his "Revision of the Melanopli" (Proc. U.S. Nat. Mus. xx.).

1. **Conalcæa miguelitana,** Scudd.

Conalcæa miguelitana, Scudd. Proc. U.S. Nat. Mus. xx. p. 24, t. 2. fig. 8 (1897) [1].

Hab. NORTH AMERICA, Arizona (*colls. L. Bruner and U.S. Nat. Mus.*).—MEXICO, Sierra de San Miguelito in San Luis Potosi [1] (*Dr. Palmer*), Ciudad in Durango 8100 feet (*Forrer*).

2. **Conalcæa truncatipennis,** Scudd.

Conalcæa truncatipennis, Scudd. Proc. U.S. Nat. Mus. xx. p. 25 (1897) [1].

Hab. Mexico, Saltillo, Coahuila [1].

Not represented in the material studied.

3. **Conalcæa neomexicana,** Scudd.

Conalcæa neomexicana, Scudd. Proc. U.S. Nat. Mus. xx. p. 26, t. 2. fig. 9 (1897) [1]; Caudell, Proc. U.S. Nat. Mus. xxviii. p. 476 (1905) [2].

? *Pezotettix humphreysii,* Thom. Rep. Geogr. and Geol. Expl. W. 100th Merid. v. p. 890, t. 45. fig. 1 (1875) [3] (in part.).

Hab. North America, Silver City in New Mexico [1], Huachuca Mts. [2] and Phœnix in Arizona (*coll. L. Bruner*).

This insect, like *C. miguelitana*, is very variable in size and colour. While the type only measured 19, the Phœnix specimen quoted is 25 millimetres in length. *C. neomexicana* will certainly be found in the adjacent portion of Mexico.

[BARYTETTIX, Scudder.

Barytettix, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (Jan. 1897); Proc. U.S. Nat. Mus. xx. pp. 10, 27 (1897).

The members of the genus *Barytettix* remind one a little of a small *Brachystola* in their general appearance. The two known species appear to be confined to the Pacific coast region in the vicinity of Cape St. Lucas.

1. **Barytettix crassus,** Scudd. (Tab. IV. figg. 8, 8 *a*, *b*, ♂; 9, ♀.)

Barytettix crassus, Scudd. Proc. U.S. Nat. Mus. xx. p. 28, t. 2. fig. 10 (1897) [1].

Hab. Lower California, San José del Cabo [1].

There are a number of specimens of both sexes in the present writer's collection. The females are much larger and more robust than the opposite sex, some of them measuring fully 40 millimetres in length.

2. **Barytettix peninsulæ,** Scudd.

Barytettix peninsulæ, Scudd. Proc. U.S. Nat. Mus. xx. p. 28 (1897) [1].

Hab. Lower California [1].

Only the type is at hand. It is much smaller than the preceding species.]

PHAULOTETTIX, Scudder.

Phaulotettix, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (Jan. 1897); Proc. U.S. Nat. Mus. xx. pp. 10, 29 (1897).

This is another genus of the wingless or brachypterous "Melanopli" that is confined to the arid regions of Northern Mexico.

1. **Phaulotettix compressus,** Scudd.

Phaulotettix compressus, Scudd. Proc. U.S. Nat. Mus. xx. p. 30, t. 2. fig. 11 (1897) [1].

Hab. MEXICO, Montelovez in Coahuila [1].

Not contained in the material studied nor known to the present writer.

CEPHALOTETTIX, Scudder.

Cephalotettix, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. p. 197 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 30 (1897).

The present genus is composed of a small, inconspicuous, subapterous form peculiar to Mexico. Two specimens only of *C. parvulus* are known.

1. **Cephalotettix parvulus,** Scudd.

Pezotettix parvulus, McNeill, MS.
Cephalotettix parvulus, Scudd. Proc. U.S. Nat. Mus. xx. p. 31 (1897) [1].
Pezotettix olivaceus, Bruner, MS.

Hab. MEXICO, Atoyac, Vera Cruz [1] (*L. Bruner*), Orizaba [1] (*W. S. Blatchley*).

This insect bears a striking resemblance to *Melanoplus geniculatus,* which is also found in the same general region. The specimen from Atoyac was captured in December.

RHABDOTETTIX, Scudder.

Rhabdotettix, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 32 (1897).

This is another genus of "Melanopli" composed of brachypterous forms of moderate size, the distribution of which seems to be chiefly in the neighbourhood of the international boundary-line between Mexico and the United States. Three species have been described.

1. **Rhabdotettix concinnus,** Scudd.

Rhabdotettix concinnus, Scudd. Proc. U.S. Nat. Mus. xx. p. 33, t. 3. fig. 2 (1897) [1].

Hab. NORTH AMERICA, Waco, Texas [1].

This insect undoubtedly reaches southward and westward into Mexican territory, since the two other representatives of the genus are confined to that country.

2. **Rhabdotettix palmeri**, Scudd.

Rhabdotettix palmeri, Scudd. Proc. U.S. Nat. Mus. xx. p. 34, t. 3. fig. 3 (1897) [1].

Hab. MEXICO, Montelovez, Coahuila [1].

3. **Rhabdotettix pilosus**, Stål.

Pezotettix pilosus, Stål, Bihang till Svensk. Vet.-Akad. Handl. v. no. 9, pp. 10, 11 (1878) [1].
Paraidemona pilosa, Brunner, Rev. Syst. Orthopt. p. 145 (1893) [2].
Rhabdotettix pilosus, Scudd. Proc. U.S. Nat. Mus. xx. p. 35 (1897) [3].

Hab. MEXICO [1–3].

This insect is unknown to the present writer.

CYCLOCERCUS, Scudder.

Cyclocercus, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 36 (1897).

Cyclocercus is still another genus of short-winged medium-sized locusts peculiar to Northern Mexico and Southern Texas. Three species were included in it by Scudder, and a fourth is now added, the last-named coming closest to *C. accola*. The previously known forms were tabulated on p. 37 of Scudder's Revision of the "Melanopli."

1. **Cyclocercus bistrigatus**, Scudd.

Cyclocercus bistrigata, Scudd. Proc. U.S. Nat. Mus. xx. p. 37, t. 3. fig. 4 (1897) [1].

Hab. MEXICO, Venis Mecas and Alvarez Mts. in San Luis Potosi and Sierra Nola in Tamaulipas [1].

2. **Cyclocercus accola**, Scudd.

Cyclocercus accola, Scudd. Proc. U.S. Nat. Mus. xx. p. 38, t. 3. fig. 5 (1897) [1].

Hab. NORTH AMERICA, Corpus Christi Bay, Texas [1].—MEXICO, Tampico (*coll. Ill. State Lab. Nat. Hist.*), Villa Lerdo in Durango (*L. Bruner*).

3. **Cyclocercus gracilis**, sp. n.

A small, slender insect in which the distinguishing character is the peculiar modification of the posterior edge of the last dorsal segment of the ♂-abdomen. Instead of being narrow and straight, or nearly so, it is rather wide and projects upon the supra-anal plate in a broad triangular lobe on each side of the middle, these lobes being nearly half as wide as the basal portion of the plate and almost one-half as long as broad.

Head about as broad as the front edge of the pronotum; eyes somewhat prominent, fully twice as long as that portion of the cheeks below them, the posterior margin more rounded than the anterior, separated

above by a space a little wider than the diameter of the second antennal joint; fastigium decidedly sulcate and greatly depressed, gently widening from the vertex anteriorly; frontal costa fairly prominent and fully twice the width of the vertex, shallowly sulcate throughout, continuous and of nearly equal width to the clypeus. Antennæ filiform, robust, as long as the head and the pronotum together. Pronotum gently widening behind, rather strongly and rugosely punctulate on the disc, the sides glabrous, the median carina prominent on the anterior, but almost obliterated on the posterior lobe, not severed by the sulci, the hind margin very broadly and roundly emarginate. Tegmina linear or gently spatulate, nearly or quite reaching the hind margin of the first abdominal segment. Auditory-apparatus large and almost circular. Abdomen slender, decidedly carinate above, gently clavate, the apex a little upturned, the last ventral segment triangular, blunt at the tip; supra-anal plate plain, triangular, with the sides somewhat rounded, provided with a narrow groove at the middle of the base; cerci about two-thirds as long as the supra-anal plate, slender, tapering, directed gently inwards. Interspace between the meso-sternal lobes one-half longer than wide; prosternal spine moderately elongate, robust, acuminate, retrorse. Hind femora projecting about one-third of their length beyond the tip of the abdomen; hind tibiæ with nine spines in the outer row.

Colour brunneo-testaceous, with a dark piceous band on each side reaching from the hind margin of the eyes across the upper half of the lateral lobes of the pronotum and extending obliquely downwards across the meso- and metapleura to the insertion of the hind femora. Sides of the abdomen also provided with a conspicuous piceous area, which gradually narrows towards the apex, where it fades away on the eighth segment. Occiput and disc of the pronotum largely fuscous, bordered on each side by a narrow inconspicuous testaceous line. The dorsum of the abdomen also of this latter colour, as is the ventral portion of the body. Hind femora testaceous above, olivaceous or flavous below, the internal and external faces more or less strongly infuscated, as are the knees; the hind tibiæ glaucous. Lower third of the sides of the pronotum and a conspicuous oblique line in advance of each coxa dirty white or pale testaceous. Tegmina dark brown.

Length of body, ♂, 13; of pronotum 3, of tegmina 2·25, of hind femora 8·25 millim.

Hab. Mexico, Tampico (*coll. Ill. State Lab. Nat. Hist.*).

Two males, captured in December. This insect approaches *C. accola*, Scudd., most closely in size and colour, but differs from it in the form of the last dorsal segment of the male abdomen as described above.

4. **Cyclocercus valgus**, Scudd.

Cyclocercus valga, Scudd. Proc. U.S. Nat. Mus. xx. p. 39, t. 3. fig. 6 (1897) [1].

Hab. Mexico, Sierra Nola, Tamaulipas [1].

Not contained in the material studied, nor is it known to the present writer.

SINALOA, Scudder.

Sinaloa, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 40 (1897).

Another genus of moderate-sized, brachypterous "Melanopli" which in its distribution is confined to N.W. Mexico. Two species have been described, but one of them seems to belong to *Calotettix*.

1. **Sinaloa behrensi,** Scudd. (Tab. IV. figg. 11, 11 *a–c*, ♂.)

Sinaloa behrensi, Scudd. Proc. U.S. Nat. Mus. xx. p. 40, t. 3. fig. 7 (1897) [1].

Hab. Mexico, Sinaloa [1], Mazatlan (*Forrer*).

The insect (♂) from Mazatlan which has been determined as this species has the hind tibiæ coral-red, instead of "flavous or flavo-testaceous" as described by Scudder.

CALOTETTIX, gen. nov.

This Melanoplid genus approaches *Sinaloa*, Scudder, and *Paraidemona*, Brunner, but differs from both of them in the characters as set forth in the synoptic table of the genera (*anteà*, p. 219). Four species are represented in the material studied, *C. bicoloripes* being taken as the type. They may be separated as follows:—

Synopsis of the Species of Calotettix.

A[1]. General colour bright yellowish-green, conspicuously marked with flavous. Hind femora not banded with fuscous.

b[1]. Lateral pale bands of the disc of the pronotum continuous to its hind margin; hind tibiæ with the apical two-fifths red; hind femora not varied with yellow . . . . . 1. *bicoloripes,* sp. n.

b[2]. Lateral pale bands of the disc of the pronotum terminating at the last transverse sulcus; hind tibiæ with the apical five-sixths red; hind femora varied with yellow . . . . . 2. *flavopictus,* sp. n.

A[2]. General colour brownish-olive or wood-brown, not conspicuously marked with flavous. Hind femora more or less conspicuously banded with fuscous.

b[1]. Abdomen faintly carinate above. Hind tibiæ and tarsi basally verditer-blue, the apical portion and tarsi scarlet-vermilion. The hind femora on inner face showing dusky bands . . . . . 3. *brevispinis,* Rehn.

b[2]. Abdomen rather strongly carinate above. Hind tibiæ and tarsi for the most part coral-red. The upper edge of hind femora showing faint transverse fuscous bands . . . . . 4. *obscurus,* sp. n.

1. **Calotettix bicoloripes,** sp. n.

Rather robust, the hind femora slightly surpassing the tip of the abdomen.

General colour yellowish-green, varied on the head and pronotum with flavous. Hind tibiæ basally glaucous, apically and the tarsi carmine.

Head moderately large, as wide as, or a trifle wider than, the front edge of the pronotum, in which it is sunk almost to the eyes; occiput gently ascending above the plane of the pronotum; vertex narrow, no broader than the diameter of the second antennal joint, sulcate, the fastigium depressed, blunt; frontal costa prominent, a little more than twice as wide as the vertex between the eyes, coarsely punctate above, sulcate below the antennæ, continuous to the clypeus, its lateral carinæ coarse; lateral carinæ of the face prominent, rather strongly divergent, straight; eyes large, prominent, elliptical, nearly double the length of the cheeks below them; antennæ filiform, as long as the head and thorax combined. Pronotum subcylindrical, slightly expanding on the hind lobe, the surface glabrous, but more or less

closely and rugosely punctate on the disc above, more distantly and coarsely so on the front lobe, while on the hind one the punctuation is close and fine; front edge rounded, hind margin truncate, the transverse sulci rather profound, continuous, median carina fairly prominent. Tegmina lateral, twice as long as broad, extending a little beyond the first abdominal segment, the veins prominent, pale. Abdomen plainly carinate above, the apex in the ♂ gently clavate; last ventral segment short, bluntly acuminate, the apex entire; supra-anal plate triangular, somewhat rounded at the sides, rather deeply but narrowly sulcate in the centre basally; marginal apophyses of the preceding segment in the form of small, cylindrical, attingent fingers that are about twice as long as broad and project into the basal part of the sulcus of the plate; cerci moderately broad, flattened, and gently tapering, a little more than twice as long as their basal width, the posterior apical edge obliquely docked. Prosternal spine pyramidal, rather long, robust, subquadrate, straight, the apex roundly acuminate; interspace between the mesosternal lobes about twice as long as wide. Posterior femora moderately robust, somewhat hirsute; hind tibiæ also hirsute, provided with ten spines in the outer row. Abdomen likewise hirsute, especially apically beneath.

General colour as described above. Antennæ pale testaceous basally, becoming ferruginous apically. Occiput, posterior edge of cheeks narrowly, a conspicuous band along each side of the disc, three conspicuous patches on the sides and alternating dashes along the front margin throughout, and the hind margin of the disc of the pronotum, bright yellow. There are likewise oblique dashes of this same colour on the pleura and several dots along the lower external carina of the hind femora. Abdomen above dark fuscous-olive, darkest basally, the segments marked with inverted <-shaped testaceous patches, the basal ones most apparent. Legs greenish, the lunate arcs of the apices of the hind femora piceous, the genicular lobes whitish apically; tibiæ as described above.

Length of body, ♂, 19; of pronotum 4·5, of tegmina 3, of hind femora 11, of antennæ 9·5 millim.

Hab. MEXICO, Victoria in Tamaulipas (*O. W. Barrett, in coll. L. Bruner*).

2. **Calotettix flavopictus,** sp. n.

A robust insect in which the hind femora are conspicuously marked across the upper edge and along the carinæ of their outer face with flavous. Hind tibiæ for the most part red, only the immediate base glaucous.

Head as broad as the front edge of the pronotum; vertex a trifle wider than the diameter of the first antennal joint, the lateral edges of the fastigium flavous; frontal costa broad and coarse, very shallowly sulcate, impunctate; lateral carinæ of the face strongly divergent. Antennæ no longer than the combined length of the head and the pronotum. Eyes not prominent, somewhat acuminate above, the front edge nearly straight, one-third or one-half longer than the infra-ocular portion of the cheeks. Pronotum strongly divergent posteriorly, the transverse sulci profound; hind lobe closely, the front one sparsely punctate, anterior edge strongly margined; the posterior lobe a little shorter than the anterior one. Tegmina about twice as long as broad, rather closely veined, the veins pale, interspaces dusky, reaching the hind margin of the first abdominal segment. Hind femora robust, not reaching the tip of the abdomen by a space equal to their greatest breadth. Valves of the ovipositor slender, of medium length, rather strongly hooked. Prosternal spine smaller than in *C. bicoloripes*; space between the mesosternal lobes quadrate, about as long as wide.

General colour greenish, varied with yellow. The yellow lines on the sides of the disc of the pronotum ending at the last transverse sulcus. The inverted <-shaped marks prominent on the dorsum of the three basal segments of the abdomen, obliterated beyond. Hind femora deep olive, crossed above and internally by three yellow bands, the carinæ of the outer face conspicuously marked with elongate flavous dashes. Antennæ yellowish.

Length of body, ♀, 27; of pronotum 6, of tegmina 3·35, of hind femora 14 millim.

Hab. MEXICO, Montelovez, Coahuila (*E. Palmer; colls. S. H. Scudder and L. Bruner*).

Three females.

3. **Calotettix brevispinis,** Rehn.

Sinaloa brevispinis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, pp. 535, 536 [1].

Hab. MEXICO, Victoria in Tamaulipas [1].

This insect is represented in the present writer's collection by one of the female co-types. It comes very near the following species.

4. **Calotettix obscurus,** sp. n.

This insect, which is the smallest of the known species belonging to the genus, is characterized by its general dark brownish-olive colour and rather slender form, and in having the hind tibiæ almost wholly red.

Head short, very little broader than the front edge of the pronotum, into which it fits almost to the hind edge of the large and somewhat prominent eyes. The latter elliptical, of about the same form in front and behind, nearly twice as long as the cheeks below them, and separated at the vertex above by a space little or no wider than the diameter of the second antennal joint. Vertex narrowly but deeply sulcate, the fastigium or vertex anteriad of the eyes roundly depressed and ovately sulcate, the margins prominent; frontal costa prominent, gently sulcate and grossly punctate, its sides contracted at a point just below the ocellus, but immediately resuming the general width and continuous to the clypeus. Antennæ moderately stout (broken in the specimen at hand), the basal joint nearly twice as broad as the vertex between the eyes. Pronotum subcylindrical, only a little expanding behind, the anterior lobe coarsely and irregularly punctate above, nearly twice the length of the posterior one, which is much more closely and finely punctate, the median carina strong throughout, interrupted by all three sulci; the posterior margin of the disc squarely truncate. Tegmina lateral, broadly spatulate, unicolorous, numerously and coarsely reticulated, their apices reaching the hind margin of the first abdominal segment. Hind femora robust, extending beyond the tip of the abdomen by the length of their knees. Abdomen rather coarsely rugose and punctate above, provided with a conspicuous but blunt dorsal carina, scarcely clavate apically; last ventral segment triangular, short, gently upturned, the apex entire; supra-anal plate plain, elongate-triangular, the middle of the basal half deeply and narrowly sulcate; the marginal apophyses of the preceding segment finger-like, minute, and attingent, resting in the sulcature of the supra-anal plate at its base. Cerci lamellate, as long as the plate, of nearly equal width, slightly sulcate externally, and with the lower apical edge obliquely docked. Prosternal spine coarse and prominent, about one and one-half times as long as broad at the base, directed gently to the rear. Hind tibiæ provided with ten spines in the outer row.

General colour very dark brownish-olive, varied with testaceous and piceous on the head, pronotum, and abdomen; the limbs, especially the hind pair, decidedly olivaceous. Sides of pronotum with indications of a rather broad piceous band, followed below by an oblique testaceous one, the former interrupted in the middle by a patch of olive-brown. The edges of the disc of the pronotum and the hind margins of the eyes on the occiput show traces of the testaceous bands which in both *C. bicoloripes* and *C. flavopictus* are yellow and so plainly visible. The <-shaped marks of the dorsum of the abdominal segments and the transverse bands on the upper edge of the hind femora are also faintly testaceous in the present species, whereas in the others, when present, they are conspicuous and yellow. Hind tibiæ and tarsi red, the former brownish basally.

Length of body, ♂, 15·5; of pronotum 3·6, of tegmina 2·85, of hind femora 10 millim.

Hab. MEXICO, Tampico (*coll. L. Bruner*).

A single male, captured in December.

AGRŒCOTETTIX, gen. nov.

A genus composed of medium-sized, brachypterous, dark-coloured locusts in which the body is rather coarse and loosely jointed. Head large and broader than the front edge of the pronotum. Pronotum rather longer than usual, prominently bordered all round, the front lobe tumid at the sides, the hind lobe

expanding, the median carina conspicuous and gently arcuate in front of the last transverse sulcus, widely severed by all the sulci, the hind margin truncate. Interspace between the mesosternal lobes a little longer than wide. Hind femora robust, about as long as the abdomen, the latter gently tapering, without a prominent dorsal carina.

1. **Agrœcotettix modestus,** sp. n. (Tab. IV. figg. 13, 13 *a*, ♀.)

General colour brunneo-testaceous varied with dark brown and black. The basal abdominal segments above varied with pale < -shaped markings bordered by black. Hind femora conspicuously banded with fuscous internally, across the upper edge, and externally above the middle, the bands on the external face strongly oblique, above and internally transverse; apex, except the genicular lobes, which are largely dirty-white, black; hind tibiæ cinereous, heavily conspersed with black on the basal half, apically tinged with purple. Head irregularly conspersed and banded with fuscous; occiput broadly in the centre and the cheeks back of the eyes banded with piceous. Middle of the disc and sides of the pronotum banded with black; on the sides below the black bands are two large dark testaceous or fawn-coloured spots, and there are similarly-coloured dashes on the pleura of the meso- and metathorax. Lower outer carina of the hind femora conspicuously dashed with black. Antennæ infuscated apically, paler at base.

Vertex between the eyes slightly wider than the diameter of the basal antennal joint, the sulcature rather profound and broadening anteriorly; the fastigium coarse and depressed; frontal costa broad and prominent above, becoming less so below, sulcate near the ocellus, sparsely punctate above; lateral or facial carinæ prominent, somewhat sinuose; occiput bulging and slightly ascending. Eyes moderately large and rather prominent, a little longer than the cheeks below them. Pronotum coarsely and sparsely punctate on the front, closely and finely so on the hind lobe. Tegmina lateral, ovate, reaching the hind edge of the first abdominal segment, rather closely and strongly veined. Metapleura strongly bicarinate in advance of the hind coxæ. Prosternal spine broad, subquadrate at the base, pyramidal, acuminate, the apex very gently directed to the front.

Length of body, ♀, 31; of pronotum 6·85, of tegmina 4·5, of hind femora 16 millim.

Hab. Mexico, Villa Lerdo, Durango (*L. Bruner*).

A single female, captured in November. This insect has been placed next to *Calotettix* on account of the picturing of the femoral and dorsal abdominal carinæ, as referred to in the description above and in the synoptic table of the genera (*anteà*, p. 219).

PARAIDEMONA, Brunner.

Paraidemona, Brunner, Rev. Syst. Orthopt. p. 145 (1893) (in part.); Scudder, Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 197 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 41 (1897).

Paraidemona contains at least a couple of species of small apterous locusts which are distributed over South-western Texas and North-eastern Mexico. They frequent more or less arid regions.

1. **Paraidemona punctata,** Stål.

Pezotettix punctatus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 11 (1878)[1].

Pezotettix nudus, Scudd. Proc. Bost. Soc. Nat. Hist. xx. p. 77 (1879)[2]; Cent. Orthopt. p. 66 (1879)[3]; Bruner, Rep. U.S. Ent. Comm. iii. p. 59 (1883)[4].

Paraidemona punctata, Brunner, Rev. Syst. Orthopt. p. 145 (1893)[5]; Scudd. Proc. U.S. Nat. Mus. xx. p. 42, t. 3. figg. 8, 9 (1897)[6].

Hab. North America [1–6], Dimit Co., Texas (*coll. L. Bruner*).

This insect certainly occurs across the Rio Grande in Mexican Territory, since the next species is common at Tampico, Tamaulipas.

2. **Paraidemona mimica,** Scudd. (Tab. IV. figg. 20, 20 *a*, *b*, ♂.)

Paraidemona mimica, Scudd. Proc. U.S. Nat. Mus. xx. p. 43, t. 3. fig. 10 (1897) [1]; Caudell, op. cit. xxvi. p. 796 (1903) [2].

Hab. North America, Texas [1 2].—Mexico, Tampico (*coll. Ill. St. Lab. Nat. Hist.*).

AIDEMONA, Brunner.

Pezotettix, in part.

Aidemona, Brunner, Rev. Syst. Orthopt. p. 145 (1893); Scudder, Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 198 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 44 (1897).

This is one of the most widely distributed of the several Mexican genera belonging to the group "Melanopli." It occurs from South-western Texas to Costa Rica, and perhaps even enters South America. Whether only a single variable species occurs over this wide area, or several distinct forms represent the genus, I am not prepared at present to state. There is, however, considerable variation noticeable among the individuals coming from different localities. The genus is reported by nearly every writer on Mexican and Central-American Acridiidæ.

1. **Aidemona azteca,** Sauss.

Platyphyma aztecum, Sauss. Rev. et Mag. Zool. (2) xiii. p. 161 (1861) [1]; Orthopt. Nov. Amer. ii. p. 12 (1861) [2]; Walk. Cat. Derm. Salt. Brit. Mus. iv. p. 716 (1870) [3]; Thomas, Rep. U.S. Geol. Surv. Terr. v. p. 223 (1873) [4].

Pezotettix aztecus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 10 (1878) [5].

Aidemona azteca, Brunner, Rev. Syst. Orthopt. p. 145 (1893) [6]; Baker, Invert. Pacif. i. p. 76 (1905) [7]; Scudd. Proc. U.S. Nat. Mus. xx. p. 45 (1897) [8].

Hab. Mexico [1–6], San Luis Potosi, Aguas Calientes, Vera Cruz, Tehuantepec, &c. [7]; Nicaragua, Realejo [8], Chinandega and San Marcos [7]; Costa Rica (*coll. L. Bruner*).

There are many Mexican and Central-American localities represented by the material at hand.

CAMPYLACANTHA, Scudder.

Hypochlora, Brunner, Rev. Syst. Orthopt. p. 145 (1893) (in part.).

Campylacantha, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 198 (1897); Proc. U.S. Nat. Mus. xx. pp. 10, 48 (1897).

The present genus is more northerly in its distribution than several of those recorded on the preceding pages. Still, one of its representatives enters Mexican territory several hundreds of miles. The various species have been tabulated by Scudder (*loc. cit.*).

1. **Campylacantha acutipennis,** Scudd.

Pezotettix acutipennis, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 472 (1875)[1]; Ent. Notes, iv. p. 71 (1875)[2]; Cent. Orthopt. p. 16 (1879)[3]; Bruner, Bull. Washb. Coll. i. p. 136 (1885)[4].

Hypochlora acutipennis, Brunner, Rev. Syst. Orthopt. p. 145 (1893)[5].

Campylacantha acutipennis, Scudd. Proc. U.S. Nat. Mus. xx. p. 50, t. 4. fig. 3 (1897)[6].

Hab. North America, Texas [1–4 6], Kansas [5 6] &c. (*L. Bruner*).

This insect is certainly distributed further to the westward, so as to cross the Rio Grande into Mexican territory. It is common in weed-patches, where it occurs most frequently on different species of *Helianthus.*

[### 2. **Campylacantha olivacea,** Scudd.

Pezotettix olivaceus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 472 (1875)[1]; Ent. Notes, iv. p. 71 (1875)[2]; Cent. Orthopt. p. 16 (1879)[3]; Bruner, Publ. Nebr. Acad. Sci. iii. p. 27 (1893)[4].

Campylacantha olivacea, Scudd. Proc. U.S. Nat. Mus. xx. p. 51, t. 4. fig. 4 (1897)[5].

Hab. North America, Texas [1–3 5] and northward [4].

While this form, or species, is found throughout the greater part of Texas, it seems to be most common northward. It may also reach Mexican territory.]

3. **Campylacantha similis,** Scudd.

Campylacantha similis, Scudd. Proc. U.S. Nat. Mus. xx. p. 52, t. 4. fig. 5 (1897)[1].

Hab. Mexico, Villa Lerdo, Durango [1].

Specimens of this insect were collected in November, among rather rank vegetation growing along an irrigating ditch.

HESPEROTETTIX, Scudder.

Hesperotettix, Scudd. Bull. U.S. Geol. Surv. Terr. ii. p. 262 (1875); Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 199 (1897); Proc. U.S. Nat. Mus. xx. pp. 11, 55 (1897); Bruner, Bull. Colorado Exp. Station, No. 94, pp. 62, 63 (1903).

Hesperotettix is a well-defined genus, the representatives of which are fairly evenly dispersed over North America between 18° and 54° N. lat. The species are, for the most part, fully winged and of a prevailing green or greenish colour. They were tabulated by Scudder (*loc. cit.*), and more recently by the present writer (Bulletin Colorado Exp. Station, No. 94, pp. 62, 63).

1. **Hesperotettix viridis,** Thomas.

Caloptenus viridis, Thom. Ann. Rep. U.S. Geol. Surv. Terr. p. 450, t. 2. fig. 3 (1872)[1]; Glover, Illustr. N. Am. Ent., Orthopt. t. 2. fig. 3 (1872)[2].

Ommatolampis viridis, Thom. Rep. U.S. Geol. Surv. Terr. v. p. 156 (1873)[3] (in part.).

Hesperotettix viridis, Uhler, Bull. U.S. Geol. Surv. Terr. iii. p. 795 (1877)[4] (in part.); Scudd. Proc. U.S. Nat. Mus. xx. p. 57, t. 4. fig. 8 (1897)[5].

Hab. North America, Southern States [1–5].—Mexico [5].

The present insect is one of the most widely-distributed members of the genus. It seems to be partial to several species of small yellow-flowered Composites as food-plants, and occurs in numbers wherever these plants are found.

2. **Hesperotettix meridionalis,** Scudd.

Hesperotettix meridionalis, Scudd. Proc. U.S. Nat. Mus. xx. p. 59, t. 4. fig. 9 (1897) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 537 [2].

Hab. Mexico, Guanajuato and Sierra Nola [1], La Joya in San Luis Potosi [2].

3. **Hesperotettix festivus,** Scudd.

Hesperotettix festivus, Scudd. Proc. U.S. Nat. Mus. xx. p. 60, t. 4. fig. 10 (1897) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 73 [2].

Hab. North America, Los Angeles Co., California [1], Arizona [2] and New Mexico (*coll. L. Bruner*).

H. festivus will certainly be found further southward in Sonora and Chihuahua, Mexico.

4. **Hesperotettix pratensis,** Scudd.

Hesperotettix pratensis, Scudd. Proc. U.S. Nat. Mus. xx. p. 64, t. 5. fig. 3 (1897) [1].

Hab. North America, various localities from Manitoba to Texas and from the Mississippi River to the Pacific Ocean [1].—Mexico, Orizaba (*coll. L. Bruner*).

The Mexican specimen is not quite typical, and may represent a closely allied species, as suggested by Scudder.

5. **Hesperotettix speciosus,** Scudd.

Pezotettix speciosus, Scudd. Final Rep. U.S. Geol. Surv. Nebr. p. 250 (1871) [1]; Glover, Illustr. N. Am. Ent., Orthopt. t. 17. fig. 4 (1874) [2].
Hypochlora speciosa, Brunner, Rev. Syst., Orthopt. p. 145 (1893) [3].
Hesperotettix speciosus, Scudd. Proc. U.S. Nat. Mus. xx. p. 66, t. 5. fig. 4 (1897) [4].
Acridium frontalis, Thom. Ann. Rep. U.S. Geol. Surv. Terr. p. 448, t. 2. fig. 1 (1872) [5].

Hab. North America, various localities from the Dakotas to Northern Mexico [1–5].—Mexico, Northern Chihuahua (*coll. L. Bruner*).

The present species is somewhat aberrant in its general structure, and varies greatly in size, the southern specimens being much larger than those from its northern range.

Another species, *H. pacificus,* Scudder, which is common about Los Angeles, California, is also likely to occur in Lower California and the northern part of Sonora, although no records of such distribution of the insect are at hand.

ÆOLOPLUS, Scudder.

Æoloplus, Scudder, Proc. Amer. Acad. Art. Sci. xxxii. no. 9, p. 199 (1897) ; Proc. U.S. Nat. Mus. xx. pp. 11, 68 (1897).

Æoloplus contains about a dozen moderate-sized locusts that bear resemblances to both *Hesperotettix* and *Melanoplus*. All the forms are distributed over the austral and Sonoran regions of North America. They appear to choose as food-plants representatives of several genera of the Chenopodiaceæ, hence are more or less restricted to localities in which these plants grow. Scudder gives a synopsis of the species in his Revision of the "Melanopli." The following forms have been recorded from, or are likely to occur in, "Biologia" territory.

1. **Æoloplus tenuipennis,** Scudd.

Æoloplus tenuipennis, Scudd. Proc. U.S. Nat. Mus. xx. p. 70, t. 5. fig. 5 (1897) [1].

Hab. North America, Fort Grant, Arizona [1].

While no specimens are at hand from "Biologia" territory, it is quite safe to include *Æ. tenuipennis* in our list, since the food-habits of the various species are such as to insure a rather wide distribution.

2. **Æoloplus elegans,** Scudd.

Æoloplus elegans, Scudd. Proc. U.S. Nat. Mus. xx. p. 71, t. 5. fig. 6 (1897) [1] ; Scudd. & Cocker. Proc. Dav. Acad. Nat. Sci. ix. p. 41 (1902) [2].

Hab. North America, Las Cruces, New Mexico [1 2].

Like the preceding species, this should also be looked for in Northern Mexico.

3. **Æoloplus crassus,** Scudd.

Æoloplus crassus, Scudd. Proc. Dav. Acad. Nat. Sci. ix. p. 42 (1902) [1].

Hab. North America, Mescalero Reservation, N. Mexico [1].—Mexico, San Luis Potosi [1].

4. **Æoloplus plagosus,** Scudd.

Pezotettix plagosus, Scudd. Ann. Rep. Chief Eng. 1876, p. 504 (1877) [1].
Æoloplus plagosus, Scudd. Proc. U.S. Nat. Mus. xx. p. 76, t. 6. fig. 1 (1897) [2].

Hab. North America, Northern New Mexico [1–2], Southern Arizona (*coll. L. Bruner*).

5. **Æoloplus uniformis,** Scudd.

Æoloplus uniformis, Scudd. Proc. U.S. Nat. Mus. xx. p. 77, t. 6. fig. 2 (1897) [1].

Hab. North America, Arizona [1] (*coll. L. Bruner*), Nevada [1].

6. **Æoloplus arizonensis,** Scudd.

Æoloplus arizonensis, Scudd. Proc. U.S. Nat. Mus. xx. p. 78, t. 6. fig. 3 (1897) [1].

Hab. North America, Mohave Desert and Fort Whipple, Arizona [1], Tucson (*coll. L. Bruner*).

7. **Æoloplus oculatus,** Scudd.

Æoloplus oculatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 79, t. 6. fig. 4 (1897) [1].

Hab. North America, Mohave Desert and Mohave, Arizona (*coll. L. Bruner*).

Probably the only reason for not having records for this and several of the preceding species from Mexican territory is because there are no collections available from that region.

MELANOPLUS, Stål.

Acridium, auct. in part.
Gryllus, auct. in part.
Caloptenus, auct. in part.
Pezotettix, auct. in part.
Melanoplus, Stål, Recens. Orthopt. i. p. 79 (1873); Scudd. Proc. U.S. Nat. Mus. xx. pp. 13, 120 (1897), &c.

Melanoplus is by far the most extensive genus of American locusts or short-horned grasshoppers, since it contains upwards of one hundred and fifty so-called species. The group seems to be confined to the North-American continent, where the different representatives are generally distributed, although the species seem to be most abundant in the temperate zone and in mountainous regions. With but few exceptions, they are frequenters of grassy glades rather than denizens of the forests or tree-covered areas. The species vary much among themselves with reference to size, colour, wing-length, &c. They are best separated by the male-characters, *i.e.* by the form of the supra-anal plate, the last ventral segment of the abdomen, and the cerci. Some of them are very widely distributed, while others are much restricted, and several are to be classed among the pests of the country, while two or three are decidedly migratory in habit. The genus has been carefully monographed by Samuel H. Scudder, hence will receive but passing notice here—a mere list with habitat of such forms as belong to "Biologia" territory being given. A single new species is also described herewith.

1. **Melanoplus marculentus,** Scudd.

Pezotettix marculentus, Bruner, MS.
Melanoplus marculentus, Scudd. Proc. U.S. Nat. Mus. xx. p. 139, t. 10. fig. 1 (1897) [1].

Hab. Mexico, numerous localities on the tablelands of the northern half of the country [1] (*coll. L. Bruner*).

This species does not occur south of Aguas Calientes, so far as the material at hand would indicate. Neither does it reach the United States.

2. **Melanoplus sonoræ,** Scudd.

Melanoplus sonoræ, Scudd. Proc. U.S. Nat. Mus. xx. p. 143, t. 10. fig. 3 (1897) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 51 [2].

Hab. North America, Huachuca Mts., Arizona [2].—Mexico, Sonora [1].

Not known to the present writer. See Rehn's discussion under *M. lakinus* [2].

3. **Melanoplus cuneatus,** Scudd.

Melanoplus cuneatus, Bruner, MS.

Melanoplus cuneatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 147, t. 10. fig. 5 (1897) [1].

Hab. North America, various localities in Southern Arizona and New Mexico [1] (*coll. L. Bruner*).—Mexico, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

4. **Melanoplus flabellifer,** Scudd.

Melanoplus flabellifer, Scudd. Proc. U.S. Nat. Mus. xx. p. 148, t. 10. fig. 6 (1897) [1].

Hab. North America, a number of localities in New Mexico, Colorado, and Utah (*coll. L. Bruner*).—Mexico, Zacatecas [1] (*coll. L. Bruner*).

5. **Melanoplus picturatus,** sp. n.

? *Melanoplus regalis,* Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 55.

Very similar to *M. regalis,* Dodge, in general build and colour, but larger and provided with proportionately longer and broader tegmina and wings.

Head about as wide as the front edge of the pronotum; eyes not prominent, straight in front, about as long as that portion of the cheeks below them, separated above by a space equal to the width of the frontal costa at the ocellus; fastigium rather strongly declivant, broadly and profoundly sulcate, the sulcature of nearly equal width throughout, the occiput noticeably projecting above the eyes. Pronotum with the anterior lobe subcylindrical, the hind lobe much expanding, the two lobes about equal in length, the transverse sulci deeply impressed, infuscated, hind edge of the disc produced into a right angle; median carina visible throughout, much stronger on the hind than on the front lobe. Tegmina and wings surpassing the tip of the abdomen and the apex of the hind femora by about 3 mm., rather sparsely and lightly veined. Hind femora robust, their length a very little more than three times their greatest width. Prosternal spine coarse, and comparatively long, retrorse, the sides parallel before the outer third, the apex bluntly acuminate. Mesosternal lobes separated by a space as wide as long.

General colour above flavo-testaceous, with apple-green on the vertex, occiput, anterior edge of disc and the middle and sides of the hind lobe of the pronotum, and the upper edge of the hind femora. A deep piceous < -shaped patch on the occiput and similarly-coloured bands on the cheeks back of the eyes; all the sulci of the pronotum and pleura likewise darkened. Hind femora externally cream-coloured and vinous, below and internally bright blood-red, provided above with two broad, transverse, fuscous patches, one just before and the other a little beyond the middle. Tegmina with a discal row of prominent black dots alternating with patches of white. The lunules and an internal prægenicular band black, that portion below the lunules and beyond the transverse black band bluish, becoming

ivory-white apically; hind tibiæ on their immediate base ivory-white, for the rest deep bluish-glaucous, the spines white, black-tipped, the tarsi largely ivory-white.

Length of body, ♀, 30; of pronotum 8, of tegmina 24, of hind femora 16, of antennæ 10 millim.

Hab. MEXICO, Colonia Garcia, Chihuahua (*C. H. T. Townsend*).

One female. There is another female specimen of the genus *Melanoplus* at hand which comes rather close to the one just described, but it is a little more slender in form and lacks the green tinge of the head and pronotum of *M. picturatus*, while the sulci are not infuscated or the hind femora so vividly coloured. Possibly the insect referred to by Rehn (Proc. Acad. Nat. Sci. Philad. 1907, p. 55) as *M. regalis*, Dodge, belongs to the present species.

6. **Melanoplus herbaceus,** Bruner.

Melanoplus herbaceus, Bruner, Bull. Div. Ent. U.S. Dept. Agric. xxviii. pp. 25, 26, figg. 13 *a, b* (1893) [1]; Scudd. Proc. U.S. Nat. Mus. xx. p. 153, t. 10. fig. 10 (1897) [2].

Æoloplus crassus, Rehn, Proc. Acad. Nat. Sci. Philad. 1902, p. 723 (teste Caudell) [3].

Hab. NORTH AMERICA, El Paso, Texas, Las Cruces, New Mexico and Fort Grant, Arizona [2] (*coll. L. Bruner*).—MEXICO, Ciudad Juarez (*coll. L. Bruner*).

This insect is very common along the banks of the Rio Grande and its lower tributaries, where it occurs, according to Prof. T. D. A. Cockerell, on *Pluchea borealis* as a food-plant.

7. **Melanoplus flavescens,** Scudd.

Melanoplus flavescens, Scudd. Proc. U.S. Nat. Mus. xx. p. 155, t. 11. fig. 1 (1897) [1].

Hab. NORTH AMERICA, San Diego, California [1].

Doubtless reaches Mexican territory, the same remark applying to the following species.

8. **Melanoplus pictus,** Scudd.

Melanoplus pictus, Bruner, MS.

Melanoplus pictus, Scudd. Proc. U.S. Nat. Mus. xx. p. 156, t. 11. fig. 2 (1897) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 77 [2].

Hab. NORTH AMERICA, Arizona, Bradshaw Mt. [1] (*coll. L. Bruner*), Phœnix [2].

[9. **Melanoplus browni,** Caudell.

Melanoplus brownii, Caud. Canad. Ent. xxxiv. p. 169 (1902) [1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 73 [2].

Hab. NORTH AMERICA, Yuma [1], Baboquivari Mts., Arizona [2].

This insect is unknown to the present writer, but, if distinct, comes close to *M. bowditchi* and its allies.]

10. **Melanoplus bowditchi,** Scudd.

Melanoplus bowditchi, Scudd. Proc. Bost. Soc. Nat. Hist. xx. p. 72 (1879) [1]; Proc. U.S. Nat. Mus. xx. p. 157, t. 11. fig. 3 (1897) [2].

Hab. North America, Texas, New Mexico, &c. (*coll. L. Bruner*).—Mexico, Northern Chihuahua (*L. Bruner*).

11. **Melanoplus flavidus,** Scudd.

Melanoplus flavidus, Scudd. Proc. Bost. Soc. Nat. Hist. xx. p. 74 (1879) [1]; Proc. U.S. Nat. Mus. xx. p. 158, t. 11. fig. 4 (1897) [2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 54 [3].

Hab. North America, various localities from Nebraska to Southern Texas and Arizona [3] (*coll. L. Bruner*).—Mexico, Tampico, Tamaulipas (*coll. Ill. State Lab. Nat. Hist.*).

12. **Melanoplus elongatus,** Scudd.

Melanoplus elongatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 160, t. 11. fig. 5 (1897) [1].

Hab. North America, Kansas and New Mexico [1].—Mexico, Villa Lerdo, Durango (*L. Bruner*), Bleados, San Luis Potosi [1] (*Dr. Palmer*), Monterey, Nuevo Leon (*Rehn*), Guanajuato (*A. Dugès*).

13. **Melanoplus glaucipes,** Scudd.

Caloptenus glaucipes, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 476 (1875) [1]; Ent. Notes, iv. p. 75 (1875) [2]; Thom. Rep. U.S. Ent. Comm. i. p. 42 (1878) [3].

Melanoplus glaucipes, Scudd. Canad. Ent. xii. p. 75 (1880) [4]; Proc. U.S. Nat. Mus. xx. p. 161, t. 11. fig. 6 (1897) [5].

Hab. North America [1–5].—Mexico, Villa Lerdo, Durango (*L. Bruner*).

14. **Melanoplus atlanis,** Riley.

Caloptenus atlanis, Riley, Ann. Rep. St. Ent. Mo. vii. p. 169 (1875) [1]; Thom. Bull. Ill. Mus. Nat. Hist. i. p. 68 (1876) [2].

Melanoplus atlanis, Scudd. Rep. U.S. Ent. Comm. ii. Append. p. 24, t. 17. fig. 6 (1881) [3]; Proc. U.S. Nat. Mus. xx. p. 178, t. 12. fig. 7 (1897) [4].

Hab. North America, various localities from the Atlantic to the Pacific and from the Saskatchewan to the Rio Grande [1–4].—Mexico, numerous places between the Rio Grande and Orizaba, Amula, and Omilteme, Guerrero (*H. H. Smith*).

This is one of the most widely distributed members of the genus, and is also variable in size and colour. The synonymy is much more completely worked out in Scudder's Monograph.

15. **Melanoplus spretus,** Uhler.

Caloptenus spretus, Uhler, MS. (1863).

Acridium spretis, Thom. Trans. Ill. St. Agr. Soc. v. p. 450 (1865) [1].

Pezotettix spretus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 14 (1878) [2].
Melanoplus spretus, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 287 (1878) [3]; Proc. U.S. Nat. Mus. xx. p. 184, t. 12. fig. 8 (1897) [4].
Melanoplus spretis, Rehn, Trans. Amer. Ent. Soc. xxvii. p. 98 (1900) [5].

Hab. NORTH AMERICA, numerous localities west of the Mississippi River and east of the coast range between the Saskatchewan and Rio Grande [1–4].—MEXICO, Sonora and Chihuahua [4], ? Tacubaya near Mexico city [5].

This species is not represented in the "Biologia" collections. It is a more northern insect than the preceding and only temporarily and at long intervals visits Mexican territory during its migratory movements. Rehn's reference is apparently an error.

[16. **Melanoplus devastator,** Scudd.

Melanoplus devastator, Scudd. Proc. Bost. Soc. Nat. Hist. xix. pp. 285–287 (1878) (part.) [1]; Proc. U.S. Nat. Mus. xx. p. 196, t. 13. figg. 3–7 (1897) [2].
Caloptenus devastator, Riley, Bull. Div. Ent. U.S. Dept. Agric. ser. i. no. xxv. pp. 28–30, figg. 6 *a–d*, 7 *a–c* (1891) [3].

Hab. NORTH AMERICA, various localities in California [1–3].

The presence of this insect so far south as Tighes would seem to indicate that it extends to Mexican territory.]

17. **Melanoplus humphreysii,** Thomas.

Pezotettix humphreysii, Thom. Rep. Geol. & Geogr. Expl. W. 100th Merid. v. p. 890 (1875) [1] (part.).
Melanoplus humphreysii, Scudd. Proc. U.S. Nat. Mus. xx. p. 206 (1897) [2].

Hab. NORTH AMERICA, Phœnix, Arizona [1 2] (*coll. L. Bruner*).

This insect should also occur a little to the southward in Sonora.

18. **Melanoplus nitidus,** Scudd. (Tab. IV. figg. 18, ♀; 19, 19 *a*, ♂.)

Pezotettix humphreysii, Scudd. Proc. Bost. Nat. Hist. xx. p. 85 (1897) [1] (part.).
Melanoplus nitidus, Scudd. Proc. U.S. Nat. Mus. xx. p. 207, t. 14. fig. 2 (1897) [2].

Hab. LOWER CALIFORNIA, Cape St. Lucas [1].—MEXICO, Tepic, Jalisco [2].

19. **Melanoplus aridus,** Scudd.

Pezotettix humphreysii, Thom. Rep. Geol. & Geogr. Expl. W. 100th Merid. v. p. 890, t. 45. figg. 1, 2 (1875) [1] (part.).
Pezotettix aridus, Scudd. Proc. Bost. Soc. Nat. Hist. xx. pp. 84, 85 (1879) [2].
Melanoplus aridus, Scudd. Proc. U.S. Nat. Mus. xx. p. 209, t. 14. fig. 3 (1897) [3]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 51 [4].

Hab. NORTH AMERICA, Arizona [1–4], Las Cruces, New Mexico and vicinity (*Cockerell*).

This and the following species should also occur in Sonora and Chihuahua to the southward.

20. **Melanoplus desultorius,** Rehn.

Melanoplus desultorius, Rehn, Proc. Acad. Nat. Sci. Philad. 1907, pp. 51–54, figg. 8, 9 [1].

Hab. North America, Carr Cañon, Huachuca Mts., Arizona [1].

21. **Melanoplus cancri,** Scudd.

Melanoplus cancri, Scudd. Proc. U.S. Nat. Mus. xx. p. 219, t. 14. fig. 10 (1897) [1].

Hab. Lower California, Cape St. Lucas [1].

Probably extends into Sinaloa.

22. **Melanoplus reflexus,** Scudd.

Melanoplus reflexus, Scudd. Proc. U.S. Nat. Mus. xx. p. 221, t. 15. fig. 1 (1897) [1].

Hab. Mexico, Ciudad del Maiz [1], and La Joya, San Luis Potosi (*Rehn*).

23. **Melanoplus meridionalis,** Scudd.

Melanoplus meridionalis, Scudd. Proc. U.S. Nat. Mus. xx. p. 223, t. 15. fig. 2 (1897) [1].

Hab. Mexico, Alvarez Mts., San Luis Potosi [1].

24. **Melanoplus palmeri,** Scudd.

Melanoplus palmeri, Scudd. Proc. U.S. Nat. Mus. xx. p. 230, t. 15. fig. 7 (1897) [1].

Hab. North America, Fort Wingate, New Mexico, and Fort Whipple, Arizona [1].—Mexico, Casas Grandes, Chihuahua (*Rehn*).

25. **Melanoplus gracilipes,** Scudd.

Pezotettix gracilipes, McNeill, MS.[1].

Melanoplus gracilipes, Scudd. Proc. U.S. Nat. Mus. xx. p. 238, t. 16. fig. 2 (1897) [2].

Hab. North America, Los Angeles, California [2].

This insect no doubt reaches Mexican territory.

26. **Melanoplus geniculatus,** Scudd. (Tab. IV. figg. 15, 15 *a*, *b*, ♂.)

Melanoplus geniculatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 229, t. 16. fig. 3 (1897) [1].

Hab. Mexico (*W. S. Blatchley*), Atoyac in Vera Cruz.

This insect occurs in the herbage growing at the edges of tropical forests and may be fairly common.

[27. **Melanoplus pinctus,** Scudd.

Melanoplus pinctus, Scudd. Proc. Dav. Acad. Nat. Sci. vii. p. 175, t. 7. fig. 7 (1899) [1].

Hab. North America, San Diego, Point Loma, and Coronado, California.]

28. **Melanoplus tenuipennis,** Scudd.

Pezotettix tenuipennis, McNeill, MS.[1].

Melanoplus tenuipennis, Scudd. Proc. U.S. Nat. Mus. xx. p. 244, t. 16. fig. 7 (1897)[2].

Hab. North America, Los Angeles, San Diego, &c., California[2] (*coll. L. Bruner*).

It evidently occurs in Mexican territory a few miles to the southward, as the faunal area is the same.

[29. **Melanoplus missionum,** Scudd.

Melanoplus missionum, Scudd. Proc. U.S. Nat. Mus. xx. p. 246, t. 16. fig. 8 (1897)[1].

Hab. North America, Los Angeles, California[1].]

[30. **Melanoplus fuscipes,** Scudd.

Pezotettix fuscipes, McNeill, MS.[1].

Melanoplus fuscipes, Scudd. Proc. U.S. Nat. Mus. xx. p. 247, t. 16. fig. 9 (1897)[2].

Hab. North America, Los Angeles[1] and other South Californian localities (*coll. L. Bruner*).]

31. **Melanoplus scitulus,** Scudd.

Melanoplus scitulus, Scudd. Proc. U.S. Nat. Mus. xx. p. 249, t. 16. fig. 10 (1897)[1].

Hab. Mexico; Alvarez Mts., San Luis Potosi[1].

32. **Melanoplus flabellatus,** Scudd.

Pezotettix flabellatus, Scudd. Proc. Bost. Soc. Nat. Hist. xx. pp. 82, 83 (1879)[1].

Melanoplus flabellatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 251, t. 17. fig. 1 (1897)[2]; Caudell, ib. xxvi. p. 801 (1903)[3].

Hab. North America, Texas[1–3].

This insect certainly occurs across the Rio Grande in Mexican territory. It is one of the common species and lives about the edges of open woods.

33. **Melanoplus inornatus,** Scudd.

Pezotettix inornatus, McNeill, MS.[1].

Melanoplus inornatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 254, t. 17. fig. 3 (1896)[2].

Hab. Mexico, Montelovez, Coahuila[2].

34. **Melanoplus femur-rubrum,** De Geer.

Acridium femur-rubrum, De Geer, Mém. Hist. Ins. iii. p. 498, t. 42. fig. 5 (1773)[1].

Caloptenus femur-rubrum, Burm. Handb. Ent. ii. p. 638 (1838)[2].

Melanoplus femur-rubrum, Scudd. Hitchc. Rep. Geol. N. H. i. 375 (1874)[3]; Proc. U.S. Nat. Mus. xx. p. 278, t. 1. fig. *h* and t. 19. figg. 1–4 (1897)[4].

Hab. North America, from the Atlantic to the Pacific and from the Saskatchewan to the Rio Grande [4].—Mexico, Queretaro, Guanajuato, Atoyac, Vera Cruz (*coll. L. Bruner*).

This insect, along with *M. atlanis* and *M. bivittatus*, enjoys the most extended distribution of all the species of the genus. It has been the most frequently mentioned in entomological literature, and has a very extended synonymy, which may be found in Scudder's paper [4] cited above.

35. **Melanoplus terminalis,** Scudd.

Melanoplus terminalis, Scudd. Proc. U.S. Nat. Mus. xx. p. 293, t. 19. fig. 7 (1897) [1].

Hab. North America, Gulf coast of Texas [1], extreme South-western Texas (*coll. L. Bruner*).

While no records or specimens of this insect are at hand from Mexican territory, it most assuredly occurs across the Rio Grande in that country.

36. **Melanoplus cyanipes,** Scudd.

Melanoplus cyanipes, Bruner, MS. [1].

Melanoplns cyanipes, Scudd. Proc. U.S. Nat. Mus. xx. p. 295, t. 19. fig. 8 (1897) [2].

Hab. North America, Los Angeles and San Diego, California [2] (*coll. L. Bruner*) Lower California, San José del Cabo.—Mexico, Tepic, Jalisco (*colls. L. Bruner and Calif. Acad. Nat. Sci.*).

37. **Melanoplus cinereus,** Scudd.

Melanoplus cinereus, Scudd. Proc. Bost. Soc. Nat. Hist. xix. pp. 288, 290 (1878) [1]; Proc. U.S. Nat. Mus. xx. p. 296, t. 19. fig. 9 (1897) [2].

Caloptenus cinereus, Riley, in Kingsley's Stand. Nat. Hist. ii. p. 195 (1884) [3].

Hab. North America, numerous localities between the 49th degree of latitude and the Mexican boundary [2] (*coll. L. Bruner*).

Since this insect is distributed over the Rocky Mountain region wherever "sage-brush" grows, it most certainly extends along the tablelands into Northern Mexico.

38. **Melanoplus complanatipes,** Scudd.

Melanoplus complanatipes, Scudd. Proc. U.S. Nat. Mus. xx. p. 298, t. 19. fig. 10 (1897) [1].

Hab. Lower California [1], Cape St. Lucas [1].—Mexico, Sonora [1].

39. **Melanoplus impiger,** Scudd.

Melanoplus impiger, Scudd. Proc. U.S. Nat. Mus. xx. p. 306, t. 20. figg. 7, 8 (1897) [1].

Hab. North America, Gulf Coast and many other Texas localities [1] (*coll. L. Bruner*).

Since this insect occurs in extreme Southern Texas on the Rio Grande, it must be also present in the adjacent Mexican territory.

40. **Melanoplus corpulentus,** Scudd.

Melanoplus corpulentus, Bruner, MS.[1].

Melanoplus corpulentus, Scudd. Proc. U.S. Nat. Mus. xx. p. 313, t. 20. fig. 10 (1897)[2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 55[3].

Hab. North America, Silver City[2] and Las Vegas, New Mexico (*Cockerell*), Huachuca Mts., Arizona[3]. — Mexico, Sonora, Zacatecas, Tlalpam, &c.[2], Guadalajara, Jalisco[3] (*Rehn*).

41. **Melanoplus variabilis,** Scudd.

Pezotettix variabilis, Bruner, MS.[1].

Melanoplus variabilis, Scudd. Proc. U.S. Nat. Mus. xx. p. 319, t. 21. fig. 8 (1897)[2].

Hab. Mexico, city of Mexico[2], Queretaro[2], &c. (*coll. L. Bruner*).

This insect is very common in the regions where it occurs, and is very variable in colour, hence the specific name.

42. **Melanoplus plebejus,** Stål.

Pezotettix plebejus, Stål, Bihang till K. Svensk. Vet.-Ak. Handl. v. no. 9, p. 12 (1878)[1].

Pezotettix pupæformis, Scudd. Proc. Bost. Soc. Nat. Hist. xx. pp. 83, 84 (1879)[2].

Melanoplus plebejus, Scudd. Proc. U.S. Nat. Mus. xx. p. 326, t. 22. fig. 2 (1897)[3].

Hab. North America, Texas[1–3].—Mexico, Victoria, Tamaulipas (*coll. Ill. St. Lab. Nat. Hist.*).

43. **Melanoplus marginatus,** Scudd.

Pezotettix marginatus, Scudd. Ann. Rep. Chief Eng. 1876, p. 504 (1876)[1].

Melanoplus marginatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 330, t. 1. fig. *i* and t. 22. fig. 5 (1897)[2].

Hab. North America, various places in Southern California[1 2], Los Angeles and San Diego (*coll. L. Bruner*).

This insect probably extends into Mexican territory.

44. **Melanoplus arizonæ,** Scudd.

Melanoplus arizonæ, Scudd. Proc. Bost. Soc. Nat. Hist. xx. pp. 64, 65 (1879)[1]; Proc. U.S. Nat. Mus. xx. p. 340 (1897)[2]; Rehn, Trans. Amer. Ent. Soc. xxvii. p. 228 (1901)[3].

Hab. North America, Arizona[1 2].—Mexico, Cuernavaca, Morelos[3].

The Mexican citation may be an error, though this is only a surmise on the part of the present writer.

45. **Melanoplus differentialis,** Uhler.

Caloptenus differentialis, Uhler, MS. (1863)[1].

Acridium differentiale, Thom. Trans. Ill. St. Agric. Soc. v. p. 450 (1865)[2].

Cyrtacanthacris differentialis, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 610 (1870)[3].

Pezotettix differentialis, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. pp. 122–123, 126 (1878)[4].

Melanoplus differentialis, Bruner, Bull. Washb. Coll. i. p. 139 (1885)[5]; Scudd. Proc. U.S. Nat. Mus. xx. p. 349, t. 23. figg. 3, 4 (1897)[6].

Hab. North America, numerous localities in the United States[2–6]. — Mexico, Queretaro and Vera Cruz (*coll. L. Bruner*), Guadalajara, Jalisco (*Rehn*).

Specimens of this insect coming from the vicinity of Vera Cruz are usually quite heavily marked with black on the hind femora and tibiæ, the black in some instances even showing a tendency towards the formation of bands. Others coming from Southern California and Northern Mexico have the hind tibiæ red. The species has evidently been spreading through the agency of commerce during recent years.

46. **Melanoplus sumichrasti,** Sauss. (Tab. IV. figg. 6, 6 *a–c*, ♂.)

Pezotettix sumichrasti, Sauss. Rev. et Mag. Zool. (2) xiii. pp. 160, 161 (1861)[1] (part.); Orthopt. Nov. Amer. ii. p. 11 (1861)[2] (part.).

Scudder says* that *Pezotettix sumichrasti*, Sauss., is perhaps a synonym of *Melanoplus bivittatus*, Say. An examination of two examples labelled by Saussure himself, and now before me, indicates that the two species are distinct. One of them (preserved in alcohol) is undoubtedly *M. bivittatus*, Say; the other (not discoloured) agrees with Saussure's description, *i. e.*, "Posterior femora with a horizontal, yellow fascia. Tibiæ below the middle red; above the middle black, with a yellow ring; spines black." In addition, I might add that the inner face and lower sulcus of the hind femora are black, with the exception of a bright coral-red vitta along the middle of the basal half; there are also a præapical yellow annulus and two transverse dusky bands across the upper edge. The cerci, last ventral segment, and supra-anal plate are shown in the illustration on Tab. IV. figg. 6, 6 *a*, *b*.

As a coincidence it may be mentioned that one of these two specimens bears the labels "Carol. S.," "Mex.," "Saussure's type," "Musée de Genève, No. 32," "*Pezotettix sumichrasti*, Sauss."; the other the labels "*Acridium sumichrasti*, Sauss., ♂, Mex. No. 50," and "*Melanoplus sumichrasti*, Sauss." The insect bearing the "type"-label (preserved in alcohol) does not agree with Saussure's diagnosis, and the name *sumichrasti* will therefore be reserved for the other example. This latter measures: length of body 28·5, of pronotum 7·45, of tegmina 22, of hind femora 16 millim.

Hab. Mexico[1 2], Merida, Yucatan (*Gaumer, in coll. L. Bruner*).

M. sumichrasti is much more closely related to *M. differentialis* than it is to *M. bivittatus*.

47. **Melanoplus robustus,** Scudd.

Caloptenus robustus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 473 (1875)[1].

Pezotettix robustus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 14 (1878)[2].

Melanoplus robustus, Scudd. Cent. Orthopt. p. 84 (1879)[3]; Proc. U.S. Nat. Mus. xx. p. 354, t. 23. fig. 5 (1897)[4].

Caloptenus ponderosus, Scudd. Proc. Bost. Soc. Nat. Hist. xvii. p. 473 (1875)[5].

Melanoplus ponderosus, Scudd. Cent. Orthopt. p. 84 (1879)[6].

Hab. North America, Gulf Coast of Texas[1–6], Organ Mts., New Mexico (*coll. Morse*).

* Proc. U.S. Nat. Mus. xx. pp. 364, 405.

Like several other species of the genus referred to on the preceding pages, this locust, without doubt, will be found to occur in Mexico.

48. **Melanoplus bivittatus,** Say.

Gryllus bivittatus, Say, Journ. Acad. Nat. Sci. Philad. iv. p. 308 (1825)[1].
Caloptenus bivittatus, Uhler, in Say's Ent. N. Amer., ed. Leconte, ii. p. 238 (1859)[2] (part.).
Melanoplus bivittatus, Scudd. Hitchc. Rep. Geol. N. H. i. p. 376 (1874)[3] (part.); Proc. U.S. Nat. Mus. xx. p. 363, t. 24. fig. 5 (1897)[4].

Hab. North America, from Canada and British Columbia to the Gulf of Mexico[4].—Mexico (*Saussure, in Mus. Geneva*), Villa Lerdo, Durango (*L. Bruner*).

One of Saussure's types mentioned in connection with the remarks under *M. sumichrasti* (the one preserved in alcohol) is, as already stated, of this species.

49. **Melanoplus thomasi,** Scudd. (Tab. IV. figg. 7, 7 *a*, *b*, ♂.)

Melanoplus thomasi, Bruner, MS.[1].
Melanoplus thomasi, Scudd. Proc. U.S. Nat. Mus. xx. p. 368, t. 25. fig. 1 (1897)[2]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 55[3].

Hab. North America, Tularosa, New Mexico (*Cockerell*), Sacramento Mts. (*Rehn*), Douglas, Arizona[3].—Mexico, Villa Lerdo, Durango[2] (*L. Bruner*).

This insect appears to be confined to mountain valleys in its distribution.

50. **Melanoplus yarrowi,** Thomas.

Caloptenus yarrowii, Thom. Rep. Geol. & Geogr. Surv. W. 100th Merid. v. p. 894, t. 45. fig. 5 (1875)[1].
Melanoplus yarrowii, Scudd. Proc. U.S. Nat. Mus. xx. p. 369, t. 25. fig. 2 (1897)[2].

Hab. North America, Grand Junction, Colorado[2], Phœnix, Arizona (*coll. L. Bruner*).

Apparently confined to the valley of the Rio Colorado, where it is not at all common, judging from the few specimens that have reached the various students of Orthoptera. It certainly reaches Northern Sonora.

[51. **Melanoplus olivaceus,** Scudd.

Melanoplus olivaceus, Bruner, MS.[1].
Melanoplus olivaceus, Scudd. Proc. U.S. Nat. Mus. xx. p. 370, t. 25. fig. 3 (1897)[2].

Hab. North America, Los Angeles, California[2], Phœnix, Arizona (*coll. L. Bruner*).]

52. **Melanoplus arboreus,** Scudd.

Melanoplus arboreus, Scudd. Proc. U.S. Nat. Mus. xx. p. 372, t. 25. fig. 5 (1897)[1].

Hab. North America, Gulf Coast of Texas[1], Arizona (*coll. L. Bruner*).

This insect is also to be looked for in the groves of Northern Chihuahua and Sonora.

PHŒTALIOTES, Scudder.

Phœtaliotes, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. p. 202 (1897); Proc. U.S. Nat. Mus. xx. pp. 13, 376 (1897).

The present monotypic genus is rather closely related to *Melanoplus*, and is distributed over most of the country west of the Mississippi River from the Saskatchewan to Mexico city.

1. **Phœtaliotes nebrascensis,** Thomas.

Pezotettix nebrascensis, Thom. Ann. Rep. U.S. Geol. Surv. Terr. v. p. 455 (1872)[1]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 13. fig. 2 (1872)[2].

Pezotettix autumnalis, Dodge, Canad. Ent. viii. p. 10 (1876)[3].

Caloptenus sanguinocephalus, La Munyon, Proc. Nebr. Assoc. Adv. Sci. March 8th, 1877[4].

Caloptenus volucris, Dodge, Canad. Ent. ix. p. 112 (1877)[5].

Euprepocnemis nebrascensis, Bruner, Publ. Nebr. Acad. Sci. iii. p. 28 (1893)[6].

Phœtaliotes nebrascensis, Scudd. Proc. U.S. Nat. Mus. xx. p. 377, t. 1. fig. *e* and t. 25. figg. 6, 7 (1897)[7]; Rehn, Proc. Acad. Nat. Sci. Philad. 1907, p. 56[8].

Hab. North America, various localities between the Saskatchewan River and the Gulf of Mexico [1–7], Tucson [7] and Carr Cañon, Huachuca Mts., Arizona [8].—Mexico, Montelovez, Coahuila, Sierra de San Miguelito, San Luis Potosi, Queretaro, Guanajuato, and Tlalpam [7].

PAROXYA, Scudder.

Paroxya, Scudder, Proc. Bost. Soc. Nat. Hist. xix. pp. 28, 29 (1877); Proc. U.S. Nat. Mus. xx. pp. 13, 380 (1897).

The representatives of the present genus are mostly northern in their distribution, since a single species only is likely to occur in territory covered by the present work.

1. **Paroxya floridana,** Thomas.

Caloptenus floridanus, Thom. Bull. U.S. Geol. Surv. Terr. i. no. 2, p. 68 (1874)[1]; Glover, Illustr. N. Amer. Ent., Orthopt. t. 17. fig. 3[2].

Paroxya floridana, Bruner, in Smith's Cat. Ins. N. J. p. 412 (1890)[3]; Scudd. Proc. U.S. Nat. Mus. xx. p. 383, t. 25. fig. 10 (1897)[4]; Caudell, ib. xxvi. p. 804 (1903)[5].

Paroxya atlantica, Scudd. Proc. Bost. Soc. Nat. Hist. xix. pp. 28, 88 (1877)[6] (part.).

Paroxya recta, Scudd. loc. cit. pp. 30, 88 (1877)[7].

Pezotettix rectus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 9, p. 12 (1878)[8].

Hab. North America, Atlantic and Gulf coast from Massachusetts to the Rio Grande [1–7], Victoria, Texas [5].

While no specimens or records are at hand from Mexican territory, this insect certainly crosses the Rio Grande into that country.

PŒCILOTETTIX, Scudder.

Pœcilotettix, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. p. 203 (1897); Proc. U.S. Nat. Mus. xx. p. 385 (1897).

This genus of rather highly coloured locusts inhabits Northern Mexico and the extreme south-western portions of the United States. Up to the present time three species have been described. They were tabulated in Scudder's 'Revision of the Melanopli,' p. 386.

1. **Pœcilotettix pantherinus,** Walk.

Acridium pantherium, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 623 (1870) [1].
Pœcilotettix pantherinus, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 538 [2].
Caloptenus (*Hesperotettix*) *picticornis,* Thom. Proc. Dav. Acad. Sci. ii. p. 125, t. 4. figg. 1, 2 (1877) [3].
Pœcilotettix picticornis, Scudd. Proc. U.S. Nat. Mus. xx. p. 386, t. 26. fig. 1 (1897) [4].

Hab. North America, Arizona [3 4]. — Mexico, Jalisco (*Schumann*), Tepic (*coll. L. Bruner*), Guadalajara [2].

This is a characteristically marked insect and cannot be confounded with any other species known to the present writer. It does not appear to be common at any locality within its range. Very likely *P. pantherinus* is confined to some special food-plant.

[2. **Pœcilotettix sanguineus,** Scudd.

Dactylotum longipennis, Bruner, MS. in litt. to C. H. T. Townsend [1].
Pœcilotettix sanguineus, Scudd. Proc. U.S. Nat. Mus. xx. p. 387, t. 26. fig. 2 (1897) [2].

Hab. North America, Bradshaw Mountain, Arizona (*coll. L. Bruner*), Grand Cañon of the Colorado, near Flagstaff, Arizona (*E. M. Erhorn*), Phœnix, Arizona (*coll. L. Bruner*).]

3. **Pœcilotettix coccinatus,** Scudd.

Pœcilotettix coccinatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 389, t. 26. fig. 3 (1897) [1].

Hab. North America, Los Angeles, California (*coll. U.S. Nat. Mus.*).

As stated in connection with *P. pantherinus,* this and the preceding species must also be confined to special food-plants. It should also occur further south in Mexican territory.

ŒDALEONOTUS, Scudder.

Œdaleonotus, Scudd. Proc. Amer. Acad. Art. Sci. xxxii. p. 203 (1897); Proc. U.S. Nat. Mus. xx. pp. 14, 390 (1897).

This genus resembles *Melanoplus* and its near allies. The different species range from Northern Mexico northward to Idaho on the Lower Snake River.

1. **Œdaleonotus enigma,** Scudd.

Pezotettix enigma, Scudd. Ann. Rep. Chief Eng. 1876, p. 505 [1].
Œdaleonotus enigma, Scudd. Proc. U.S. Nat. Mus. xx. pp. 391–393, t. 26. figg. 4–6 (1897) [2].
Pezotettix jucundus, Scudd. Ann. Rep. Chief Eng. 1876, p. 505 [3].
Melanoplus collaris, Scudd. Proc. Bost. Soc. Nat. Hist. xix. p. 286 (1878) [4].
Melanoplus flavolineatus, Bruner, Bull. Div. Ent. U.S. Dept. Agric. xxviii. p. 33 (1893) [5].

Hab. North America, Pacific Coast from Washington to Southern California [2] (*coll. L. Bruner*).—Mexico, Sonora (*coll. L. Bruner*).

PHILOCLEON, Scudder.

Philocleon, Scudder, Proc. Amer. Acad. Art. Sci. xxxii. p. 203 (1897); Proc. U.S. Nat. Mus. xx. pp. 14, 396 (1897).

Philocleon is the name given to a medium-sized, variegated, apterous locust found on the tablelands of North and Middle Mexico. Only a single species is known.

1. **Philocleon nigrovittatus,** Stål. (Tab. IV. figg. 17, 17 *a*, ♂.)

Pezotettix nigrovittatus, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. iii. no. 14, p. 32 (1875) [1]; v. no. 9, p. 15 (1878) [2].
Philocleon nigrovittatus, Scudd. Proc. U.S. Nat. Mus. xx. p. 396, t. 26. figg. 8, 9 (1897) [3].
Pezotettix apterus, Bruner, MS. [4].

Hab. Mexico [1 2], Comancho, Zacatecas [3] (*coll. L. Bruner*), San Luis Potosi [3].

OSMILIA, Stål.

Acridium, auct. (part.).
Osmilia, Stål, Recens. Orthopt. i. p. 68 (1873); Syst. Acrid. i. pp. 10, 25 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 50 (1898); Bruner, Proc. U.S. Nat. Mus. xxx. pp. 643, 693 (1906).

The genus *Osmilia* of Stål contains several inconspicuously coloured species of locusts that are confined to Tropical America. At least three, and possibly four, species occur within "Biologia" territory. They may be separated by the annexed table:—

Synopsis of the Species of Osmilia.

A[1]. Hind wings at base pale greenish-yellow.
  b[1]. Rather slender, with the head only a trifle wider than the front edge of the pronotum. The outer face of hind femora infuscated and with its lower edge decidedly yellow . . . . . 1. *flavolineata,* De G.
  b[2]. More robust, with the head markedly wider than the front edge of the pronotum. The outer face of hind femora but little infuscated, its lower edge less decidedly yellow . . . . . 2. *tolteca,* Sauss.
A[2]. Hind wings pale blue . . . . . 3. *cœlestis,* Burm.; 4. *violacea,* Thunb.

1. **Osmilia flavolineata,** De Geer.

Acrydium flavo-lineatum, De Geer, Mém. Ins. iii. p. 497, t. 42. fig. 4 (1773) [1].
Acridium flavo-lineatum, Burm. Handb. Ent. ii. pt. 2, p. 634 (1838) [2].
Acridium (Osmilia) flavo-lineatum, Stål, Recens. Orthopt. i. p. 68 (1873) [3].
Osmilia flavo-lineatum, Bruner, Bull. Lab. Nat. Hist. Iowa, iii. p. 65 (1895) [4].

Hab. MEXICO [3]; NICARAGUA [4]; PANAMA [3].—SOUTH AMERICA, Surinam [1 3].

There is some confusion existing in the references between the present insect and the one following, but until some one carefully examines the specimens coming from the various localities where *Osmiliæ* with hyaline wings occur no definite conclusion can be formed.

2. **Osmilia tolteca,** Sauss.

Acridium toltecum, Sauss. Rev. et Mag. Zool. (2) xiii. p. 163 (1861) [1]; Thom. Acrid. N. Am. p. 232 (1873) [2].
Aleuas toltecus, Rehn, Trans. Am. Ent. Soc. xxix. p. 14 (1902) [3].
Osmilia tolteca, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 443 [4]; Bruner, Ohio Nat. vii. p. 13 (1906) [5].

Hab. MEXICO [1 2 3], Presidio (*Forrer*), Dos Arroyos, Venta de Zopilote, Atoyac. Orizaba, Teapa (*H. H. Smith*), Cordova (*Höge*), Valladolid, Yucatan [3] (*Gaumer*); BRITISH HONDURAS, Belize (*Blancaneaux*); HONDURAS, Ruatan I. (*Gaumer*); NICARAGUA, Escondido River [3]; COSTA RICA, Caché (*Rogers*); PANAMA, Volcan de Chiriqui (*Champion*).

In addition to the references given above, there are specimens of *Osmilia* at hand from numerous other Mexican and Central-American localities. These either represent two or more closely allied, or a single very variable, species. To judge from Saussure's description [1] (evidently of a male), most of these insects are larger, and they are more robust and have broader tegmina than *O. flavolineata.* It is also noticeable that in these Mexican and Central-American examples the hind femora and tibiæ are longer and coarser than in *O. flavolineata.* Many of them also have their tegmina conspicuously mottled with fuscous.

3. **Osmilia cœlestis,** Burm.

Acridium cœlestre, Burm. Handb. Ent. ii. 2, p. 634 (1838) [1].
Osmilia cœlestis, Brunner, Proc. Zool. Soc. Lond. 1893, p. 606 [2]; Bruner, Journ. N. York Ent. Soc. xiv. p. 156 (1906) [3].

Hab. HONDURAS [2].—BRAZIL [1 2]; PERU [2]; TRINIDAD [3]; WEST INDIES, Grenada [2].

I do not know how this insect differs from *O. violacea,* Thunb. European authors, however, have considered them distinct.

4. **Osmilia violacea,** Thunb.

Gryllus violaceus, Thunb. Mém. Acad. Pétersb. ix. p. 413 (1824) [1].

Acridium (*Osmilia*) *violaceum,* Stål, Recens. Orthopt. i. p. 68 (1873) [2].

Osmilia violacea, Gigl.-Tos, Boll. Mus. Zool. Anat. Comp. Torino, ix. no. 184, p. 18 (1894) [3]; xiii. no. 301, p. 5 (1897) [4].

Hab. PANAMA, Darien [3].—BRAZIL [1 2].

No specimens of a blue-winged *Osmilia* are at hand from "Biologia" territory.

TEINOPHAUS, gen. nov.*

The characters for this genus are those of the species.

1. **Teinophaus saussurei,** sp. n. (*Ommatolampis saussurei*, Tab. IV. figg. 3, 3 *a*, 4, 4 *a*, ♂; 5, ♀.)

A medium-sized locust with greatly abbreviated, lateral tegmina, and the pronotum truncate and slightly emarginate above both in front and behind. The whole insect is sparsely hirsute.

Head medium in size, about as wide as the front edge of the pronotum; the occiput short and gently elevated above the level of the pronotum; vertex about (♂), or not quite (♀), as wide as the diameter of the basal antennal joint, the fastigium gently depressed and shallowly sulcate, the sulcature continuous with that of the frontal costa, the tempora elongate, somewhat coarsely punctulate; frontal costa a little prominent between the antennæ, less so below, sulcate throughout with the portion above the ocellus, coarsely punctate, the bounding-walls prominent; lateral or facial carinæ prominent, gently divergent below. Eyes large, prominent, strongly elliptical, considerably longer than that portion of the cheeks below them. Pronotum rather coarsely, the hind lobe more closely, punctate, gently broadening behind, weakly tectate, the median carina prominent, but distinctly interrupted by all the transverse sulci, which are rather deep; lateral carinæ absent, the anterior lobe nearly twice as long as the posterior one, front and hind margins of disc truncate and greatly emarginate at the middle. Tegmina lateral, spatulate, the apex reaching the middle of the second abdominal segment, rather strongly but sparsely veined. Hind femora of normal form, a little longer than (♂), or scarcely so long as (♀), the abdomen, the superior carina serrate or dentate; hind tibiæ eight-spined externally; anterior and middle femora of ♂ only slightly inflated. Abdomen strongly carinated, the valves of the ovipositor long, coarse, and exserted, only moderately strongly hooked; last ventral segment of ♂ broadly scoop-shaped, the apex shallowly, broadly, and roundly emarginate; supra-anal plate plain, broadly and roundly triangulate; the preceding segment without apophyses; cerci long and slender, bowed first outwardly, then inwardly and to the rear, as in some of the related South-American genera. Mesosternal lobes separated by a subquadrate space about equal in width to the lobes themselves, the interspace between the metasternal lobes nearly or quite half as great as that of the mesosternum. Prosternal spine of moderate size, upon a large base, acuminate and directed gently to the front.

General colour above dark wood-brown, with an olivaceous tinge in ♂, below a trifle paler. Sides of pronotum without infuscation, but with the lower third testaceous, the pleura also with pale streaks. Hind femora of ♀ marked above just before the middle with a conspicuous black patch, while the serrations and spots along the outer carinæ are likewise black.

Length of body, ♂ 17·5, ♀ 24; of pronotum, ♂ 3·5, ♀ 4·85; of tegmina, ♂ 3·75, ♀ 4·25; of hind femora, ♂ 10·5, ♀ 13·5 millim.

Hab. MEXICO, Atoyac, Vera Cruz (*L. Bruner*: ♂ ♀, in coitu), Teapa, Tabasco (*H. H. Smith*: ♀).

* Given as *Tænophaus* in the Table, *anteà*, p. 222.

PERIXERUS, Gerstaecker *.

Perixerus, Gerst. Stett. ent. Zeit. xxxiv. p. 192 (1873); Rehn, Trans. Am. Ent. Soc. xxvii. p. 98 (1900); Proc. Acad. Nat. Sci. Philad. 1904, p. 541.

The members of the present genus are rather brightly coloured like the various species of *Dactylotum*, and, like most of the representatives of that genus, are confined to Mexican territory. The species may be separated as follows:—

Synopsis of the Species of Perixerus.

A[1]. Prothorax, tegmina, and legs densely pubescent. General colour of head, legs, and pronotum cinnamon or ferruginous	1. *squamipennis*, Gerst.
A[2]. Prothorax, tegmina, and legs not densely pubescent. General colour olivaceous or oil-green.	
b[1]. Prevailing colour above deep olivaceous. Head and pronotum with a central line of crimson. Hind tibiæ light olivaceous	2. *lævis*, Rehn.
b[2]. Prevailing colour oil-green and lemon-yellow varied with verditer-blue. Hind tibiæ glaucous	3. *variabilis*, Rehn.

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* PŒPEDETES, Saussure.

Pœpedetes, Sauss. Rev. et Mag. Zool. (2) xiii. p. 158 (1861); Thom. Rep. U.S. Geol. Surv. Terr. v. p. 220 (1873).

Evidently related to *Dactylotum*, Charp., and *Perixerus*, Gerst., the species of both these genera possessing bright red and orange markings on a rather dark background. The type of *Pœpedetes* is from Mexico.

1. **Pœpedetes corallinus**, Sauss.

Pœpedetes corallinus, Sauss. Rev. et Mag. Zool. (2) xiii. p. 158 (1861)[1]; Thom. Syn. Acrid. N. Am. p. 221 (1873)[2].

Hab. Mexico [1 2].

PEDIES, Saussure.

Pedies, Sauss. Rev. et Mag. Zool. (2) xiii. p. 157 (1861); Thom. Syn. Acrid. N. Am. p. 221 (1873).

The description of the present genus is even less definite than that of the preceding. It may, however, be related to *Pœpedetes* and to *Dactylotum*. Only a single species is mentioned.

1. **Pedies virescens**, Sauss.

Pedies virescens, Sauss. Rev. et Mag. Zool. (2) xiii. p. 157 (1861)[1]; Thom. Syn. Acrid. N. Am. p. 221 (1873)[2].

Hab. Mexico [1 2].

CALACRIS, Walker.

Calacris, Walk. Cat. Dermapt. Salt. Brit. Mus. iv. p. 639 (1870); Thom. Syn. Acrid. N. Am. p. 227 (1873).

Walker included in this genus species of such diverse structure as are now placed in *Diponthus*, *Zoniopoda*, *Coscineuta*, *Osmilia*, and *Vilerna*. The only representative of his genus recorded from "Biologia" territory is *C. pudica*, Walk., which he compares with *Acridium* (*Diponthus*) *permistum*, Serville. So far as the present writer is aware, no insect has since been recorded from Mexico that could possibly be referred to Walker's

1. **Perixerus squamipennis,** Gerstaecker.

Perixerus squamipennis, Gerst. Stett. ent. Zeit. xxxiv. p. 192 (1873)[1]; Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 541[2].

Hab. Mexico[1 2].

The present species is not represented among the material studied.

2. **Perixerus lævis,** Rehn. (Tab. III. figg. 20, 20 *a*, ♂.)

Perixerus lævis, Rehn, Trans. Am. Ent. Soc. xxvii. p. 98 (1900)[1]; Proc. Acad. Nat. Sci. Philad. 1904, p. 541[2].

Hab. Mexico, Jalisco (*Schumann*: 1 ♂, 2 ♀), Eslava, Distrito Federal[1].

The male agrees well with the female in colour and in having the surface generally glabrous. Its dimensions are as follows:—Length of body 17·5; of pronotum 4, of tegmina 4·1, of hind femora 10·5 millim.

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species. It is quite probable, therefore, that the locality assigned to the insect as a habitat is an error (see also the remarks concerning the possible affinities of this insect, *anteà*, p. 222).

PEGASIDION, Saussure.

Pegasidion, Sauss. Rev. et Mag. Zool. (2) xiii. p. 319 (1861); Orthopt. Nova Amer. ii. p. 21 (1861).

The present genus is placed under "Œdipodiformes" by Saussure, but, as stated in the footnote on p. 222, *anteà*, the "prosternum cornu cylindrico armatum" in the generic description as given by him inclines one to think that his specimen belonged either to the Pyrgomorphinæ or the Acridiinæ. Nothing among the material studied seems to come anywhere near it. It calls to mind the members of the genus *Paropomala* as characterized on pages 39–41, with *P. pallida* as a bare possibility of being the insect described by Saussure.

1. **Pegasidion volitans,** Sauss.

Pegasidion volitans, Sauss. Rev. et Mag. Zool. (2) xiii. p. 319 (1861)[1]; Orthopt. Nova Amer. ii. p. 21 (1861)[2]; Thom. Syn. Acrid. N. Am. p. 198 (1873)[3].

Hab. Mexico[1–3].

No specimen has been found among the material studied which could be placed here.

HERMISTRIA, Stål.

Hermistria, Stål, Recens. Orthopt. i. pp. 33, 52 (1873).

According to Stål the present genus is related to, or at least reminds one of, *Dactylotum.* His description is so meagre that it has been impossible to place *Hermistria* definitely in the series of genera, and for this reason it was omitted from the Table, *anteà*, pp. 209–222.

1. **Hermistria pulchripes,** Stål.

Hermistria pulchripes, Stål, Recens. Orthopt. i. p. 52 (1873)[1]; Scudd. Ind. N. Am. Orthopt. p. 138 (1901)[2].

Hab. Mexico[1 2].

This insect is unknown to the present writer. The colour "olivacea; pedibus nigris" does not belong to any group thus far recognized among the large amount of material studied.

3. **Perixerus variabilis,** Rehn.

Perixerus variabilis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 541 [1].

Hab. Mexico, Guadalajara, Jalisco [1].

Not contained in the collections studied and unknown to the present writer.

DACTYLOTUM, Charpentier.

Dactylotum, Charp. Orthopt. Descript. et Depict. t. 52 (1845); Stål, Syst. Acrid. i. p. 33 (1878); Scudd. Gen. N. Am. Orthopt. p. 50 (1897).

The insects which constitute the present genus are all brachypterous, brightly coloured, medium-sized locusts, which are distributed over Northern Mexico and the more arid portions of the Rocky-Mountain regions of North America south of the Yellowstone River. At least six species have thus far been described. They may be separated as follows :—

Synopsis of the Species of Dactylotum.

A[1]. The light colour largely orange-yellow or flavous. Tegmina with their dorsal edges nearly or quite touching.

b[1]. General colour of the body chiefly pale, the dark markings blackish-brown. Tegmina fully as long as the pronotum. Hind femora moderately slender . . . . . 1. *bicolor,* Charp.

b[2]. General colour of the body chiefly black, the pale markings flavous with an orange tinge on the disc of the pronotum. Tegmina much shorter than the pronotum. Hind femora decidedly robust . . . . . 2. *flavopictum,* sp. n.

A[2]. The light colour largely orange-vermilion and flavous varied with white. Tegmina usually lateral, seldom, if ever, touching at their dorsal edges.

b[1]. General form rather robust; the sides of the abdomen without the row of pallid spots. Antennæ entirely black.

c[1]. Tegmina moderately broad, but narrower than in the species falling into the series A[1], their veins dirty white or straw-yellow. Prosternal spine pale testaceous or dirty white . . 3. *variegatum,* Scudd.

c[2]. Tegmina (presumably) not especially wide, their veins pale green. Prosternal spine heavy, obtuse, ferruginous . . . . 4. *picturatum,* nom. n.

b[2]. General form normal, the sides of the abdomen provided with a row of pale spots. Antennæ more or less annulate with testaceous.

c[1]. Tegmina moderately broad, fully as long as the pronotum, their veins apple-green. Hind tibiæ blackish-blue . . . . . 5. *histricum,* Rehn.

c[2]. Tegmina narrow, decidedly shorter than the pronotum, their veins dirty white. Hind tibiæ pale glaucous . . . . . [6. *pictum,* Thom.]

1. **Dactylotum bicolor,** Charpentier.

Dactylotum bicolor, Charp. Orthopt. Descript. et Depict. t. 52 (1845) [1].

Hab. Mexico [1].

The only reference to the habitat of this insect, the type of the genus, is that given by Charpentier. Since the other species of *Dactylotum* are distributed over the table-lands of Middle and Northern Mexico, it is quite probable that its habitat is to be sought for in the same general region.

2. **Dactylotum flavopictum,** sp. n.

Most closely related to the preceding by having the pale markings chiefly flavous or lemon-yellow. The ground-colour is deep black, instead of tinted with blue, green, or brown. The other characters as indicated in the synoptic table of the species.

Length of body, ♂ 22, ♀ 35; of pronotum, ♂ 6·75, ♀ 10; of tegmina, ♂ 5, ♀ 7·5; of hind femora, ♂ 12, ♀ 17 millim.

Hab. "Mexico" (*coll. S. H. Scudder*).

No definite locality is given, save Palmer's assorting, No. 1221. This insect is apparently the least conspicuous of the species in the field, and, like the other members of the genus, must depend upon some obnoxious flavour as a means of protection against bird and other vertebrate enemies.

3. **Dactylotum variegatum,** Scudd.

Pezotettix variegatus, Scudd. Proc. Bost. Soc. Nat. Hist. xx. p. 75 (1879) [1].

Ductylotum variegatum, Towns. Ins. Life, vi. pp. 30, 31 (1893) [2]; Scudd. & Cocker. Proc. Dav. Acad. Sci. ix. p. 51 (1902) [3]; Rehn, Proc. Acad. Nat. Sci. Philad. 1902, p. 725 [4]; 1904, p. 539 [5].

Hab. North America, New Mexico [3 4 5] to California [1] (*Scudder*), Silver City and Arizona (*coll. L. Bruner*).—Mexico, Casas Grandes, Chihuahua [5].

4. **Dactylotum picturatum,** nom. nov.

Dactylotum pictum, Gerst. (nec Thomas) Stett. ent. Zeit. xxxiv. p. 192 (1873) [1].

The present species, which was described under the same specific name employed three years earlier by Thomas, is distinct, as shown by the synoptic table given above. It must, therefore, have a new name, and *picturatum* is here suggested.

Hab. Mexico [1].

While no material is at hand to illustrate Gerstaecker's species, the description would indicate that it is most nearly related to, if not identical with, *D. variegatum,* Scudder. The habitat "Mexico" does not indicate sufficiently close to be of any use in deciding synonymy.

5. **Dactylotum histricum,** Rehn.

Dactylotum histricum, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, pp. 539, 540[1].

Hab. MEXICO, La Joya, San Luis Potosi[1].

This insect seems to come closer to *D. pictum* than to any of our other described species. The rather distant habitat and the much longer tegmina, however, indicate its distinctness.

[6. **Dactylotum pictum,** Thomas.

Pezotettix pictus, Thom. Proc. Acad. Nat. Sci. Philad. 1870, p. 78[1].

Pezotettix (*Dactylotum*) *pictus,* Bruner, Bull. Div. Ent. U.S. Dept. Agric. iv. p. 57 (1884)[2].

Dactylotum pictum, Scudd. Proc. Dav. Acad. Nat. Sci. viii. p. 67 (1900)[3].

Hab. NORTH AMERICA, various localities on the plains and east slope of the Rocky Mountains between Montana and Southern New Mexico[1–3].

There is a bare possibility that this species reaches Mexican territory on the higher tablelands and mountain-ranges.]

[AGESANDER, Stål.

Agesander, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 35 (1878); Syst. Acrid. i. p. 35 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 50 (1898).

Agesander is still another of the Tropical American locust genera composed, so far as at present known, of subapterous insects. Only a single species has been described.

[1. **Agesander ruficornis,** Stål.

Agesander ruficornis, Stål, Bihang till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 81 (1878)[1]; Syst. Acrid. i. p. 81 (1878)[2].

Hab. COLOMBIA[1 2].

While this insect has not been reported from "Biologia" territory, nor is contained in the collections being studied, it is safe to include it here. Most of these jungle-frequenting tropical forms live under conditions so similar that they usually enjoy a comparatively wide distribution.]

RHYTIDICHROTA, Stål.

Rhytidichrota, Stål, Recens. Orthopt. i. pp. 35, 54 (1873); Syst. Acrid. i. pp. 34, 75 (1878); Giglio-Tos, Boll. Mus. Zool. Anat. Comp. Torino, xiii. no. 311, p. 50 (1898).

The several species belonging to the present genus have the general appearance of an *Ommatolampis*, Burm., from which they differ in several respects, as indicated in the synoptic table of genera (*anteà*, pp. 209–222). While the collections at hand do

not contain any specimens, published records make it necessary to include six forms. These may be separated as follows:—

Synopsis of the Species of Rhytidichrota.

A[1]. Hind tibiæ armed with seven spines on the outer border. Anterior edge of the pronotum distinctly ascending.
  b[1]. Antennæ distinctly ensiform. General colour obscure greenish-olive; hind tibiæ apically with the tarsi miniaceous . . . . . 1. *ensicornis*, Stål.
  b[2]. Antennæ very narrowly and obsoletely subensiform or linear.
    c[1]. General colour varying from coral-red to subolivaceous-black. Surface of head, thorax, and basal abdominal segments above granulose . . . . . [2. *varicolor*, Stål.]
    c[2]. General colour yellowish-testaceous. Surface of the head, thorax, and basal abdominal segments above rugose . . . . . [3. *sellata*, Stål.]
A[2]. Hind tibiæ armed externally with eight spines. Anterior edge of the pronotum not ascending.
  b[1]. Dorsum of the pronotum and basal abdominal segment provided on each side with smooth, somewhat elevated, spots or callosities . . [4. *antennata*, Stål.]
  b[2]. Dorsum of the pronotum and basal abdominal segment without callosities.
    c[1]. General colour yellowish testaceous . . . . . [5. *turgida*, Stål.]
    c[2]. General colour obscure olivaceous green; the antennæ, palpi, cerci, and genicular portion of hind femora subsanguineous . . . . [6. *brunneri*, Stål.]

1. **Rhytidichrota ensicornis**, Stål.

Rhytidichrota ensicornis, Stål, Bih. till K. Svensk. Vet.-Akad. Handl. v. no. 4, p. 76 (1878)[1]; Syst. Acrid. i. p. 76 (1878)[2].

Hab. Panama [1 2].

Not found among the material studied and unknown to the present writer.

[2. **Rhytidichrota varicolor**, Stål.

Rhytidichrota varicolor, Stål, Syst. Acrid. i. p. 76 (1878)[1].

Hab. Colombia, Medellin [1].]

[3. **Rhytidichrota sellata**, Stål.

Rhytidichrota sellata, Stål, Recens. Orthopt. i. p. 55 (1873)[1]; Syst. Acrid. i. p. 77 (1878)[2].

Hab. Colombia [1 2].]

[4. **Rhytidichrota antennata**, Stål.

Rhytidichrota antennata, Stål, Recens. Orthopt. i. p. 55 (1873)[1]; Syst. Acrid. i. p. 78 (1878)[2].

Hab. Colombia, Remedios [1 2].]

[5. **Rhytidichrota turgida,** Stål.

Rhytidichrota turgida, Stål, Recens. Orthopt. i. p. 54 (1873) [1]; Syst. Acrid. i. p. 78 (1878) [2].

Hab. Colombia, Antioquia [1 2].]

[6. **Rhytidichrota brunneri,** Stål.

Rhytidichrota brunneri, Stål, Syst. Acrid. i. p. 78 (1878) [1].

Hab. Colombia [1].]

As stated above, all of these insects are liable to occur within "Biologia" territory.

RHACHICREAGRA, Rehn.

Rhachicreagra, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 444.

The present genus contains several species of medium-sized, almost apterous, tropical locusts, which are somewhat distantly related to *Polysarcus*, Saussure. They live about the edges of jungles and in open woods, where they are to be found in moderate numbers. Their sombre colours protect them to a certain extent against birds and other vertebrate enemies. The four species may be separated by the subjoined table:—

Synopsis of the Species of Rhachicreagra.

A[1]. Form decidedly robust, the hind femora coarse and considerably surpassing the apex of the abdomen in both sexes. Pronotal carina strongly undulate or toothed, as is also the hind portion of the metathorax and the first abdominal segment.

b[1]. Legs of male uniformly oil-green, the hind pair of the female ochraceous-cinnamon above . . . . . 1. *nothra,* Rehn.

b[2]. Legs of both sexes, except the outer face of the hind femora and the hind tibiæ of the male, without the greenish tinge. The carinæ of the upper edge strongly dotted with fuscous . . . . . 2. *pallipes,* sp. n.

A[2]. Form moderately slender, the hind femora more graceful and extending beyond the tip of the abdomen in the males only. Pronotal carina gently undulate, but not serrate, the hind edge of the first abdominal segment only gently nodulose at the middle.

b[1]. Body rather strongly rugose above on the thorax and the first abdominal segment. Antennæ long and slender. General colour of male, including the legs, deep verdigris-green . . . . . 3. *æruginosa,* sp. n.

b[2]. Body above comparatively smooth. Antennæ shorter and coarser. General colour of both sexes brownish-clay, the legs of the male pale oil-green . . . . . 4. *gracilis,* sp. n.

1. **Rhachicreagra nothra,** Rehn.

Rhachicreagra nothra, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 444–448, figg. 36–39 [1].

Hab. Costa Rica, Carrillo [1], Monte Redondo (*Underwood*).

This species is the type of the genus. The single male specimen referred to by Rehn as coming from Monte Redondo and differing so materially from the others in colour very likely represents still another species.

2. **Rhachicreagra pallipes,** sp. n.

Of about the same size and build as *R. nothra*, but readily recognizable by its shorter hind legs and by its freedom from green as a characteristic colour, even in the ♂, in which sex the outer face of the hind femora and the hind tibiæ are alone tinged with dull olive. The anterior and middle legs and the upper portion of the basal two-thirds of the hind femora are testaceo-ferruginous. The body above in the ♀ is a little darker and profusely dotted and conspersed with fuscous, while in the ♂ this portion is dark brown varied with paler dots and lines. The dusky bands on the sides of the head and pronotum are arcuate and bordered above by a narrow brownish-testaceous stripe, which is especially noticeable in the ♀. The antennæ are pale at the base, becoming a little infuscated apically. Genicular lunules of hind femora blackened. Sides of basal abdominal segments not marked with fuscous or piceous.

Length of body, ♂ 4, ♀ 6; of hind femora, ♂ 12, ♀ 15 millim.

Hab. Costa Rica, Juan Viñas (*L. Bruner*).

One male, one female, and three nymphs, found in March.

3. **Rhachicreagra æruginosa,** sp. n.

A little longer, but at the same time rather more slender, and with shorter and more graceful hind femora, than *R. nothra*, Rehn. The antennæ are very slender and of the same length as the hind femora. The two forks of the cerci are nearly equal, while in *R. pallipes* the posterior branch is much the heavier and fully twice the length of the anterior one. *R. æruginosa*, as indicated in the synoptic table, is largely of a deep verdigris-green, and on the dorsum of the thorax and the first abdominal segment nearly black. The pallid lower edges of the pronotal sides and cheeks are dirty cream, while the upper edges of the immediate base of the hind femora and middle abdominal segments are testaceous.

Length of body, ♂, 18·5; of pronotum 4·1, of hind femora 12 millim.

Hab. Costa Rica, Limon (*M. A. Carriker, Jr.*).

One female.

4. **Rhachicreagra gracilis,** sp. n.

This insect is very similar in its general colour to *R. pallipes*, but it is much smaller, more slender, and smoother. It also differs from the other species of the genus in having the sides of the three basal abdominal segments marked with piceous. The antennæ are entirely pallid and the genicular lunules of the hind femora are not infuscated. The general colour of both sexes is brownish-clay above, more or less profusely conspersed with black. The legs of the ♂ are pale oil-green, with the genicular region of the hind pair paler and tinged with ferruginous; those of the ♀ are of the same general colour as the body and marked by a few dusky dots on the carinæ. Face and lower borders of the sides of the pronotum pale ochraceous.

Length of body, ♂ 14·5, ♀ 24; of pronotum, ♂ 3·5, ♀ 4·25; of hind femora, ♂ 10, ♀ 12·5 millim.

Hab. Costa Rica, Juan Viñas (*L. Bruner*).

The locality Juan Viñas is on the Limon and San José Railway at an elevation of a little over 3500 feet above sea-level. The females were quite lazy and remained hidden among the leaves and other vegetation near the ground, so that but few were

taken, while the males were more active and jumped about so as to attract one's attention to them. Accordingly, a good series of the latter was collected.

MICROTYLOPTERYX, Rehn.

Microtylopteryx, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 448.

The present genus is a somewhat aberrant one among the Acridiinæ, since it has some of the characteristics of the Pyrgomorphid-genus *Aspidophyma.* In fact one species (*M. fusiformis*) has been figured on Tab. IV. as *A. americana.* The species are found in Costa Rica and Nicaragua, where they are at home among the fallen leaves in and about the forests. Two forms have thus far been described.

1. **Microtylopteryx hebardi,** Rehn.

Microtylopteryx hebardi, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 448–451, figg. 40, 42[1].

Hab. Costa Rica[1], Carrillo.

2. **Microtylopteryx fusiformis,** Rehn. (*Aspidophyma americana,* Tab. IV. figg. 27, 27 *a*, ♂.)

Microtylopteryx fusiformis, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, pp. 451–454, figg. 41, 43[1].

Hab. Nicaragua (*coll. L. Bruner*); Costa Rica, Carrillo[1], Juan Viñas (*L. Bruner*).

This species may be regarded as the type of the genus, since it seems to be more common and at the same time enjoys a wider distribution than the preceding.

[POLYSARCUS, Saussure.

Polysarcus, Sauss. Rev. et Mag. Zool. 1859, p. 392; Stål, Syst. Acrid. i. p. 34 (1878); Brunner, Rev. Syst. Orthopt. p. 148 (1893); Gigl.-Tos, Boll. Mus. Zool. Comp. Torino, no. 311, p. 50 (1898).

This Brazilian genus is included on account of its peculiar type of thoracic structure and because of its relationship with *Rhachicreagra* and *Microtylopteryx.* Only a single species is known.

1. **Polysarcus atavus,** Sauss.

Polysarcus atavus, Sauss. Rev. et Mag. Zool. 1859, p. 392[1].

Hab. Brazil[1], Bahia.]

APPENDIX.

WHILST the present volume was passing through the press several additional forms of "Biologia" Acridiidæ came to light. The most important of these is *Taxiarchus septentrionalis*, Bruner [Entom. News, xvi. pp. 313 & 314 (Dec. 1905)], which adds another subfamily, the Proscopinæ, to the region covered by this work. It was captured by M. A. Carriker, Jr., at Pozo Azul, Costa Rica, who found both sexes.

NOTE.—In the preceding pages the references to three of the species figured on Tab. III. have been accidentally omitted. They are as follows:—

Paropomala pallida (p. 40). (Tab. III. figg. 28, 28 *a*, ♀.)
„ *virgata* (p. 41). (Tab. III. fig. 27, ♀.)
Rhicnoderma pugnax (p. 249). (*Aristia megacephala*, Tab. III. figg. 21, 21 *a–d*, ♀.)

Fam. PHASMIDÆ *.

It is more than ten years ago that the Godman-Salvin collection of Phasmidæ was entrusted to Hofrath C. Brunner von Wattenwyl for determination and study. The famous Austrian entomologist would not undertake to publish a separate memoir on the collection, but preferred to incorporate the descriptions of the new species and genera in the great monograph on the Phasmidæ of the world, 'Die Insektenfamilie der Phasmiden,' which, in collaboration with Dr. Jos. Redtenbacher, he has just completed. Consequently it has not been possible to prepare an account of the collection until the present year, or to include the family in its proper place in the Orthoptera. The following pages contain a list of the Phasmidæ of Central America compiled from the aforesaid monograph, and it will be seen that there are numerous species not represented in the Godman-Salvin collection. The dichotomous keys to the subfamilies, genera, and species are reproduced with the necessary modifications from the corresponding keys in 'Die Insektenfamilie der Phasmiden,' as it was thought that they would prove useful to any one studying the Central-American fauna, but for the descriptions of the genera and species students are referred to the original sources and to the monograph. The plates illustrating this collection were prepared some years ago in Vienna under the supervision of Hofrath C. Brunner von Wattenwyl, and as his views of the nomenclature of the Phasmidæ had at that time not reached the finality now attained in his monograph, the names of the species given on the plates in some cases differ from those used in the monograph. (See "Explanation of Plates," *infrà*, p. 377.) Several South-American or Antillean forms have been figured, presumably because Hofrath C. Brunner von Wattenwyl holds elastic views as to the limitations of the Central-American region, and no doubt some of these species will eventually be found to occur also within the "Biologia" limits; in the text they are quoted, as elsewhere in this work, in square brackets.

Conspectus subfamiliarum.

1. Tibiæ 4 posticæ area impressa apicali triangulari haud instructæ . Sectio ANAREOLATÆ.
   2. Segmentum medianum metanoto multo brevius . . . . . BACUNCULINÆ.
   2′. Segmentum medianum metanoto longius vel æquilongum . . . . . PHIBALOSOMINÆ.

1′. Tibiæ 4 posticæ area impressa apicali triangulari instructæ . . . Sectio AREOLATÆ.
   2. Segmentum medianum metanoto distincte, plerumque multo brevius . PYGIRHYNCHINÆ.
   2′. Segmentum medianum metanoto longius vel subæquilongum.
      3. Segmenta abdominis ♂ quadrata, ♀ transversa. Pedes inermes, femoribus nec compressis nec foliaceo-dilatatis . . . . . ANISOMORPHINÆ.
      3′. Segmenta abdominis plurima elongata vel femora antica compressa vel foliaceo-dilatata . . . . . PHASMINÆ.

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* Arranged by R. SHELFORD, M.A., F.L.S.

Sect. ANAREOLATÆ.

Subfam. *BACUNCULINÆ.*

Conspectus generum.

1. Segmentum abdominale ♂ dorsale nonum lobis liberis, segmentum ventrale nonum normale. ♀ operculum ovipositorem abscondens.
2. Segmentum abdominale secundum in ♂ duplo haud longius quam latius, in ♀ vix longius quam latius.
3. Segmentum anale in ♂ valde tumescens, apice leviter coarctatum quomodo campanam, cercos includentes formans. Operculum apice acute emarginatum . . . . . LIBETHRA, Stål.
3′. Segmentum anale in ♂ planiusculum, cercos liberans. Operculum apice obtusum vel acuminatum.
4. Femora intermedia et postica gracilia, subtus mutica . . . OCNOPHILA, Br.
4′. Femora intermedia et postica crassiuscula, subtus apice spinis instructa . . . . . PARADIAPHEROMERA, Br.
2′. Segmentum abdominale secundum in utroque sexu duplo longius quam latius.
3. Operculum segmentum anale haud superans . . . . . DYME, Stål.
3′. Operculum longe productum . . . . . CALYNDA, Stål.
1′. Segmentum abdominale ♂ dorsale nonum lobis inflexis, subtus contiguis. Segmentum ventrale nonum tubæforme clausum. ♀ operculum fila ovipositoris liberans.
2. Femora intermedia et postica inermia . . . . . BACUNCULUS, Burm.
2′. Femora intermedia et postica subtus spina majore armata . . . DIAPHEROMERA, Gray.

LIBETHRA, Stål.

Libethra, Stål, Rec. Orth. iii. pp. 20, 74 (1875); Brunner, Insektenfam. Phasmiden, ii. p. 303 (1907).

Conspectus specierum.

1. Caput bifoliatum vel bispinosum.
2. Femora intermedia et postica superne multilobulata . . . . . [*L. rabdotula,* Br.]
2′. Femora intermedia et postica superne integra.
3. Femora intermedia subtus utrinque unilobata.
4. Lobi femorum intermediorum in tertia parte basali siti. Segmenta abdominalia basalia integra . . . . . *L confusa,* Br.
4′. Lobi femorum intermediorum in medio siti. Segmenta abdominalia basalia margine postico bilobulata . . . . . *L. elegantior,* Br.
3′. Femora omnia integra . . . . . *L. regularis,* Br.
1′. Caput muticum . . . . . *L. brevipes,* Br.

1. [**Libethra rabdotula,** Br. (*Caulonia rabdotula,* Tab. V. figg. 2 *a*, *a′*, ♂; 2 *b*, *b′*, ♀.)

Libethra rabdotula, Brunner, op. cit. ii. p. 307 (1907).

Hab. COLOMBIA, Bogota.]

2. **Libethra confusa,** Br.

Libethra confusa, Brunner, op. cit. ii. p. 308 (1907).

Hab. GUATEMALA (*Mus. Vienna; Mus. Geneva*).

3. **Libethra elegantior,** Br.

Libethra elegantior, Brunner, op. cit. ii. p. 308 (1907).

Hab. MEXICO, Omilteme in Guerrero 8000 feet (*H. H. Smith, in coll. Godman & Salvin*: 1 ♀, type).

4. **Libethra regularis,** Br.

Libethra regularis, Brunner, op. cit. ii. p. 308 (1907).

Hab. MEXICO (*Mus. Budapest*: ♀).—TRINIDAD, Port of Spain (*Mus. Hamburg*: ♀ type).

5. **Libethra brevipes,** Br.

Libethra brevipes, Brunner, op. cit. ii. p. 309 (1907).

Hab. MEXICO (*Mus. Paris*).

OCNOPHILA, Br.

Ocnophila, Brunner, op. cit. ii. p. 309 (1907).

Conspectus specierum.

1. Caput haud lobatum, interdum spinosum.	
2. Femora intermedia vel postica superne lobis singulis ornata.	
3. Caput inter oculos bispinosum. Mesonotum et segmenta abdominalia integra	*O. crudis,* Br.
3′. Caput in occipite spinosum. Mesonotum et segmenta abdominalia lobata.	
4. Picea. Occiput 4-spinosum. Pronotum rugosum	*O. strumosa,* Br.
4′. Albo-pruinosa. Occiput multispinosum. Pronotum biseriatim dense spinulosum	*O. ornatissima,* Br.
2′. Femora omnia superne integra vel lobulis minimis regulariter dispositis instructa, interdum subtus lobulata vel lobulato-dentata.	
3. Vertex muticus, interdum granulis majoribus obsitus.	
4. Caput granulis majoribus obsitum, haud carinatum.	
5. Abdomen totum distincte multicarinatum. Femora submutica.	[*O. submutica,* Br.]
5′. Abdomen indistincte carinatum. Femora intermedia et postica subtus minime lobulata	*O. meditans,* Br.
4′. Caput minime granulosum vel læve, carinatum	*O. ciliata,* Br.
3′. Vertex bispinosus	*O. godmani,* Br.
1′. Caput in occipite bi-auriculatum	*O. mexicana,* Sauss.
Species incertæ sedis	*O. aurita,* Rehn.

1. **Ocnophila crudis,** Br.

Ocnophila crudis, Brunner, op. cit. ii. p. 312 (1907).

Hab. MEXICO (*Mus. Paris*).

2. **Ocnophila strumosa,** Br.

Ocnophila strumosa, Brunner, op. cit. ii. p. 312 (1907).

Hab. GUATEMALA (*Mus. Stuttgart*).

3. **Ocnophila ornatissima,** Br.

Ocnophila ornatissima, Brunner, op. cit. ii. p. 312 (1907).

Hab. GUATEMALA (*Mus. Stuttgart*: type), San Juan in Vera Paz (*Champion, in coll. Godman & Salvin*: 1 ♀ larva).

[4. **Ocnophila submutica,** Br.

Ocnophila submutica, Brunner, op. cit. ii. p. 313 (1907).

Hab. LOWER CALIFORNIA (*Mus. Paris*).—PERU.]

5. **Ocnophila meditans,** Br.

Ocnophila meditans, Brunner, op. cit. ii. p. 313 (1907).

Hab. GUATEMALA, Vera Paz (*Champion, in coll. Godman & Salvin*: 1 ♀, type).

6. **Ocnophila ciliata,** Br.

Ocnophila ciliata, Brunner, op. cit. ii. p. 313 (1907).

Hab. MEXICO, Amula in Guerrero 6000 feet (*H. H. Smith*); GUATEMALA, Panzos in Vera Paz (*Champion*) [*coll. Godman & Salvin*: 1 ♀, type, 2 larvæ].

7. **Ocnophila godmani,** Br.

Ocnophila godmani, Brunner, op. cit. ii. p. 314 (1907).

Hab. MEXICO, Vera Cruz (*Schumann*); GUATEMALA, Senahu and Purula in Vera Paz (*Champion*) [*coll. Godman & Salvin*: 2 ♂♂, 1 ♀, types].

8. **Ocnophila mexicana,** Sauss.

Ceroys mexicanus, Saussure, Miss. Sci. Mex., Orthopt. p. 167, t. 4. fig. 17 (1870).

Ocnophila mexicana, Brunner, op. cit. ii. p. 315 (1907).

Hab. MEXICO, Eastern Cordillera (*Mus. Paris, Mus. Geneva, Mus. Vienna*), Atoyac in Vera Cruz (*H. H. Smith, in coll. Godman & Salvin*: 1 ♀).

9. **Ocnophila aurita,** Rehn.

Libethra auritus, Rehn, Proc. Ac. Nat. Sci. Philad. 1905, p. 796.

Hab. COSTA RICA, San José 1160 metres (*Mus. Acad. Nat. Sci. Philadelphia*).

This species is omitted from Brunner and Redtenbacher's monograph; judging from the description, it appears to be closely allied to, and perhaps not distinct from, *O. mexicana*, Sauss.

PARADIAPHEROMERA, Br.

Paradiapheromera, Brunner, op. cit. ii. p. 317 (1907).

Conspectus specierum.

1. Statura major. Metanotum strumosum . . . . . *P. strumosa*, Br.
1′. Statura minor. Metanotum bituberculatum . . . . . *P. armata*, Br.

1. **Paradiapheromera strumosa**, Br. (Tab. V. fig. 4, ♂.)

Paradiapheromera strumosa, Brunner, op. cit. ii. p. 317 (1907).

Hab. Panama, Chiriqui * (*Mus. Vienna*), Darien (*Mus. Paris*, *Mus. Oxford*).

2. **Paradiapheromera armata**, Br. (Tab. V. fig. 3, ♂.)

Paradiapheromera armata, Brunner, op. cit. ii. p. 317 (1907).

Hab. Panama, Chiriqui 4000–6000 feet (*Champion, in coll. Godman & Salvin*: 1 ♂, type).

DYME, Stål.

Dyme, Stål, Rec. Orth. iii. p. 23 (1875); Brunner, op. cit. ii. p. 318 (1907).

Conspectus specierum.

♂♂.

1. Thorax tuberculatus . . . . . *D. grossetuberculata*, Br.
1′. Thorax lævis.
  2. Femora intermedia et postica apice subtus denticulata.
    3. Femora intermedia et postica subtus carina mediana apice minutissime quadri- vel quinque-denticulata . . . . . *D. discors*, Br.
    3′. Femora intermedia apice subtus carina mediana bispinulosa. *D. modesta*, Br.
  2′. Femora intermedia et postica apice subtus mutica.
    3. Segmenta abdominalia terminalia haud carinata . . . . *D. chiriquensis*, Br.
    3′. Segmenta abdominalia terminalia carinata . . . . . *D. incolumis*, Br.

♀♀.

1. Corpus plus minusve granulosum.
  2. Femora intermedia ante medium bilobulata . . . . . *D. depressa*, Br.
  2′. Femora intermedia haud lobulata . . . . . *D. reclusa*, Br.
1′. Corpus læve. (Thorax interdum spinis nonnullis obsitus.)
  2. Thorax latere et subtus spinis longis . . . . . *D. irregulariter-spinosa*, Br.
  2′. Thorax muticus . . . . . *D. chiriquensis*, Br.

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* Chiriqui is in Panama, and not in Peru as stated in the "Monograph."

1. **Dyme grossetuberculata,** Br.

Dyme grossetuberculata, Brunner, op. cit. ii. p. 323 (1907).

Hab. HONDURAS (*Mus. Vienna*).

2. **Dyme discors,** Br.

Dyme discors, Brunner, op. cit. ii. p. 324 (1907).

Hab. PANAMA, Volcan de Chiriqui (*Champion, in coll. Godman & Salvin*: 5 ♂ ♂).

3. **Dyme modesta,** Br.

Dyme modesta, Brunner, op. cit. ii. p. 324 (1907).

Hab. PANAMA, Chiriqui (*Champion, in coll. Godman & Salvin*: 1 ♂, type).

4. **Dyme chiriquensis,** Br.

Dyme chiriquensis, Brunner, op. cit. ii. p. 325 (1907).

♀. Lævis, colore nitido, olivaceo. Antennæ longiores quam pedibus anticis. Femora intermedia et (?) postica mutica. Abdomen haud carinatum. Segmentum anale carinatum, apice emarginatum, lamina supra-analis triangularis, minuta. Operculum haud carinatum, lanceolatum, apice obtuso, apicem abdominis attingens. Cerci breves, teretes, subacuminati.

Long. corp. 100·1 mm.
,, meson. 25 mm.
,, metan. c. segm. med. 17 mm.
,, fem. ant. 26 mm.

Hab. GUATEMALA, San Gerónimo (*Champion, in coll. Godman & Salvin*: ♀); PANAMA, Chiriqui (*Mus. Vienna*: ♂ type).

The description of the female is drawn up from a single example in the Godman and Salvin collection labelled "*Dyme lævis*" by Brunner; no species of this name appears in his Monograph, and the specimen cannot be referred to any of the forms described therein from females only. I am almost certain that this is the female of *D. chiriquensis,* Br., known only by the male, and as such have described it.

5. **Dyme incolumis,** Br.

Dyme incolumis, Brunner, op. cit. ii. p. 326 (1907).

Hab. GUATEMALA, Panzos in Vera Paz (*Conradt, in coll. Godman & Salvin*: 1 ♂, type).

6. **Dyme depressa,** Br.

Dyme depressa, Brunner, op. cit. ii. p. 327 (1907).

Hab. GUATEMALA, Las Mercedes, Cerro Zunil, Purula in Vera Paz (*Champion, in coll. Godman & Salvin*: 3 ♀ ♀, including type).

7. **Dyme reclusa,** Br.

Dyme reclusa, Brunner, op. cit. ii. p. 327 (1907).

Hab. MEXICO, "tierra caliente" (*Mus. Geneva, Mus. Vienna*).

8. **Dyme irregulariter-spinosa,** Br.

Dyme irregulariter-spinosa, Brunner, op. cit. ii. p. 328 (1907).

Hab. GUATEMALA, Purula in Vera Paz (*Champion, in coll. Godman & Salvin*: 1 ♀, type).

CALYNDA, Stål.

Calynda, Stål, Rec. Orth. iii. p. 24 (1875); Brunner, op. cit. ii. p. 328 (1907).

Conspectus specierum.

1. Vertex bispinosus	*C. bicuspis,* Stål.
1′. Vertex muticus	*C. quadrilobulata,* Br.

1. **Calynda bicuspis,** Stål.

Calynda bicuspis, Stål, op. cit. iii. p. 78 (1875); Brunner, op. cit. ii. p. 329 (1907).

Hab. PANAMA, Chiriqui (*Mus. Stockholm; Mus. Vienna; Champion, in coll. Godman & Salvin*).

2. **Calynda quadrilobulata,** Br.

Calynda quadrilobulata, Brunner, op. cit. ii. p. 329 (1907).

Hab. COSTA RICA (*van Patten, in coll. Godman & Salvin*: type).

BACUNCULUS, Burm.

Bacunculus, Burmeister, Handb. Ent. ii. p. 566 (1839); Brunner, op. cit. ii. p. 331 (1907).

Conspectus specierum.

♂ ♂.

1. Vertex muticus.
   2. Vertex lævis.
      3. Cerci simplices.
         4. Segmentum abdominale ventrale muticum.
            5. Caput unicolor.

6. Statura minor. Femora fusco et pallide variegata . . .	*B. striatus,* Burm.
6′. Statura major. Femora unicoloria fusca	*B. mexicanus,* Gray.
5′. Caput inter oculos linea transversa nigra, fascia pallida apposita necnon fasciis pallidis longitudinalibus infra oculos ornatum	*B. pictus,* Br.

4′. Segmentum abdominale ventrale nonum apice dentatum.
5. Segmentum abdominale ventrale nonum apice subtus bidentatum . . . . . *B. prætermissus,* Br.
5′. Segmentum abdominale ventrale nonum apice subtus unidentatum . . . . . *B. inconspicuus,* Br.
3′. Cerci apice unidentati . . . . . *B. unidentatus,* Br.
2′. Vertex inter oculos carinulis longitudinalibus duabus vel tribus instructus.
3. Cerci simplices.
4. Cerci graciles. Segmentum abdominale ventrale nonum brevissimum . . . . . *B. carinulatus,* Br.
4′. Cerci breves, crassi, obtusi. Segmentum abdominale ventrale nonum longius quam latius . . . . . *B. godmani,* Br.
3′. Cerci trifidi.
4. Cerci teretes.
5. Mesonotum in dimidia parte antica minime granulosum. Dentes tres cercorum fere æquilongi. Statura minor . . *B. tridens,* Burm.
5′. Mesonotum totum læve. Dente cercorum superno ambobus alteris longiore.
6. Statura major. Mesonotum teres . . . . . *B. elongatus,* Br.
6′. Statura minor. Mesonotum depressum, latere acute carinatum . . . . . *B. contractus,* Br.
4′. Cerci compressi . . . . . *B. ignavus,* Rehn.
1′. Vertex bispinulosus vel bituberculatus.
2. Spinulæ verticis majores. Caput cum thorace acute granulosum . *B. olmecus,* Sauss.
2′. Spinulæ verticis minimæ vel vertex tantum bituberculatus. Caput cum thorace lævis.
3. Segmentum abdominale ventrale nonum transversum, appendiculatum.
4. Segmentum abdominale ventrale nonum utrinque appendice articulatim inserta instructum . . . . . *B. forcipatus,* Br.
4′. Segmentum abdominale ventrale nonum latere dextro in appendicem longam productum . . . . . *B. incongruens,* Br.
3′. Segmentum abdominale ventrale nonum haud appendiculatum.
4. Cerci furcati . . . . . *B. phalangiphora,* Rehn.
4′. Cerci simplices . . . . . *B. physconia,* Rehn.

Species incertæ sedis . . . . . *B. cacica,* Kaup.

♀ ♀.

1. Vertex muticus.
2. Thorax lævis . . . . . *B. striatus,* Burm.
2′. Thorax granulosus.
3. Femora intermedia integra.
4. Thorax teres, haud carinatus.
5. Operculum apicem abdominis haud attingens . . . . . *B. tridens,* Burm.

5′. Operculum apicem abdominis valde superans	*B. contractus*, Br.
4′. Thorax carinatus	*B. ignavus*, Rehn.
3′. Femora intermedia in tertia parte basali subtus utrinque bilobulata	*B. foliatus*, Br.
1′. Vertex tuberculatus vel cristatus.	
2. Vertex tuberculatus	*B. guatemalæ*, Rehn.
2′. Vertex bicristatus	*B. physconia*, Rehn.
Species incertæ sedis	*B. cacica*, Kaup; *B. palmeri*, Caud.

1. **Bacunculus striatus,** Burm. (Tab. V. figg. 5 *a*, *a*′, ♂; 5 *b*, ♀.)

Bacteria (*Bacunculus*) *striata*, Burmeister, Handb. Ent. ii. p. 567 (1839).
Bacunculus striatus, Brunner, op. cit. ii. p. 333 (1907).

Hab. North America, Texas.—Mexico (*Mus. Brit.*, *Berlin*, *Oxford*, *Geneva*, *Vienna*).

2. **Bacunculus mexicanus,** Gray.

Heteronemia mexicana, Gray, Syn. Phasm. p. 19 (1835).
Bacunculus mexicanus, Brunner, op. cit. ii. p. 333 (1907).

Hab. Mexico (*Mus. Brit.*, *Geneva*, *Vienna*, *Budapest*).

This species is also included by Brunner under the genus *Bacteria* (*op. cit.* iii. p. 423), but an examination of Gray's type enables me to fix the systematic position of the insect with certainty in *Bacunculus*.

3. **Bacunculus pictus,** Br.

Bacunculus pictus, Brunner, op. cit. ii. p. 333 (1907).

Hab. Mexico, Atoyac in Vera Cruz (*Schumann, in coll. Godman & Salvin*); Guatemala (*Mus. Stuttgart*, *Mus. Vienna*), Senahu in Vera Paz (*Champion*) [*coll. Godman & Salvin*: 2 ♂ ♂, types].

4. **Bacunculus prætermissus,** Br.

Bacunculus prætermissus, Brunner, op. cit. ii. p. 333 (1907).

Hab. Guatemala (*Mus. Vienna*, *Mus. Stuttgart*), San Gerónimo (*Champion*); Costa Rica (*Van Patten*) [*coll. Godman & Salvin*: 2 ♂ ♂].

5. **Bacunculus inconspicuus,** Br.

Bacunculus inconspicuus, Brunner, op. cit. ii. p. 334 (1907).

Hab. Mexico (*Mus. Paris*); Costa Rica (*Mus. Geneva*, *Mus. Vienna*).

6. **Bacunculus unidentatus,** Br.

Bacunculus unidentatus, Brunner, op. cit. ii. p. 334 (1907).

Hab. Mexico, Atoyac in Vera Cruz, Jalisco (*Schumann, in coll. Godman & Salvin*: 1 ♀, 1 larva).

7. **Bacunculus carinulatus,** Br.

Bacunculus carinulatus, Brunner, op. cit. ii. p. 334 (1907).

Hab. Mexico, Ciudad in Durango 8100 feet (*Forrer*), Sierra de las Aguas Escondidas in Guerrero 7000 feet (*H. H. Smith*) [*coll. Godman & Salvin*: 2 ♂ ♂, types].

8. **Bacunculus godmani,** Br.

Bacunculus godmani, Brunner, op. cit. ii. p. 334 (1907).

Hab. Mexico, Amula in Guerrero 6000 feet (*H. H. Smith*), Jalisco (*Schumann*) [*coll. Godman & Salvin*: 3 ♂ ♂ (types), 2 larvæ, ♂ & ♀].

9. **Bacunculus tridens,** Burm.

Bacteria tridens, Burmeister, Handb. Ent. ii. p. 567 (1839).
Bacunculus tridens, Brunner, op. cit. ii. p. 334 (1907).

Hab. Mexico (*Mus. Berlin, Mus. Brit., Mus. Paris, Geneva, Vienna*), Amula, Omilteme, and Chilpancingo in Guerrero 4600–8000 feet (*H. H. Smith*) [*coll. Godman & Salvin*: 4 ♂ ♂, 1 ♀].

10. **Bacunculus elongatus,** Br.

Bacunculus elongatus, Brunner, op. cit. ii. p. 335 (1907).

Hab. Mexico, Dos Arroyos in Guerrero 1000 feet (*H. H. Smith, in coll. Godman & Salvin*: 1 ♂, type).

11. **Bacunculus contractus,** Br.

Bacunculus contractus, Brunner, op. cit. ii. p. 335 (1907).

Hab. Mexico, Sierra de Nayarit in Jalisco (*Mus. Paris*).

12. **Bacunculus ignavus,** Rehn.

Heteronemia ignava, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 54.

Hab. Costa Rica, Piedras Negras (*U.S. Nat. Mus.*).

13. **Bacunculus olmecus,** Sauss.

Bacteria olmecus, Saussure, Miss. Sci. Mex., Orthopt. p. 156 (1870).
Bacunculus olmecus, Brunner, op. cit. ii. p. 335 (1907).

Hab. Mexico, Eastern Cordillera (*Mus. Paris*).

14. **Bacunculus forcipatus,** Br.

Bacunculus forcipatus, Brunner, op. cit. ii. p. 335 (1907).

Hab. Mexico, San Salvador (*Mus. Vienna*).

15. **Bacunculus incongruens,** Br.

Bacunculus incongruens, Brunner, op. cit. ii. p. 336 (1907).

Hab. MEXICO, Teapa in Tabasco (*H. H. Smith*); GUATEMALA, Senahu in Vera Paz (*Champion*) [*coll. Godman & Salvin*: 10 ♂ ♂, including type].

16. **Bacunculus phalangiphora,** Rehn.

Sermyle phalangiphora, Rehn, Ent. News, 1907, p. 229.

Hab. BRITISH HONDURAS, Belize (*J. D. Johnson, in Mus. Acad. Nat. Sci. Philadelphia*).

17. **Bacunculus physconia,** Rehn.

Sermyle physconia, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 51.

Hab. COSTA RICA, Piedras Negras (*U.S. Nat. Mus.*).

18. **Bacunculus guatemalæ,** Rehn.

Sermyle guatemalæ, Rehn, Trans. Amer. Ent. Soc. xxix. p. 7 (1903).

Hab. GUATEMALA, Gualan (*U.S. Nat. Mus.*).

19. **Bacunculus foliatus,** Br.

Bacunculus foliatus, Brunner, op. cit. ii. p. 336 (1907).

Hab. MEXICO, Guerrero (*coll. Godman & Salvin, teste Brunner*).

I can find no specimens of this species in the collection.

20. **Bacunculus (?) cacica,** Kaup.

Bacteria cacica, Kaup, Berl. ent. Zeitschr. xv. p. 28 (1871).

Hab. MEXICO.

Omitted by Brunner from his Monograph.

21. **Bacunculus (?) palmeri,** Caud.

Bacillus palmeri, Caudell, Ent. News, 1902, p. 274.

Hab. MEXICO, Durango (*U.S. Nat. Mus.*).

Also omitted from Brunner's Monograph.

DIAPHEROMERA, Gray.

Diapheromera, Gray, Syn. Phasm. p. 18 (1835); Brunner, op. cit. ii. p. 337 (1907).

Conspectus specierum.

	♂ ♂.
1. Cerci simplices.	
2. Femora intermedia et postica subtus carina mediana extra spinam normalem mutica	*D. calcarata,* Burm.
2′. Femora intermedia et postica subtus carina mediana obtuse denticulata	*D. denticrus,* Stål.
1′. Cerci furcati, inæquales	*D. furcata,* Br.

♀ ♀.

1. Femora intermedia et postica subtus extra spinam normalem mutica.
   2. Femora intermedia et postica subtus carina mediana, extra spinam normalem, integra . . . . . *D. calcarata,* Burm.
   2′. Femora intermedia et postica subtus carina mediana minutissime crenulata . . . . . *D. nitens,* Br.
1′. Femora intermedia et postica subtus carina mediana per totam longitudinem spinosa . . . . . *D. denticrus,* Stål.

Species incertæ sedis . . . . . *D. velii,* Walsh; *D. beckeri,* Kaup; *D. bidens,* Kaup; *D. strigiceps,* Kaup.

1. **Diapheromera calcarata,** Burm. (*Trychopeplus spinoso-lobatus,* Tab. VI. fig. 4, ♀.)

Bacteria calcarata, Burmeister, Handb. Ent. ii. p. 56 (1839).
Diapheromera calcarata, Brunner, op. cit. ii. p. 338 (1907).

Hab. Mexico (*Mus. Berlin, Mus. Vienna*), Chihuahua (*M. Kerr, in coll. Godman & Salvin*: 1 ♂).

2. **Diapheromera denticrus,** Stål.

Diapheromera denticrus, Stål, Rec. Orth. iii. p. 76 (1875); Brunner, op. cit. ii. p. 338 (1907).

Hab. North America, Louisiana, Texas.—Mexico, Jalapa (*Mus. Hamburg*).

3. **Diapheromera furcata,** Br. (Tab. V. fig. 6, ♂.)

Diapheromera furcata, Brunner, op. cit. ii. p. 338 (1907).

Hab. Mexico, Amula 6000 feet, and Venta de Zopilote 2800 feet, both in Guerrero (*H. H. Smith, in coll. Godman & Salvin*: 2 ♂ ♂, 1 ♀, types).

This species varies considerably in size.

4. **Diapheromera nitens,** Br.

Diapheromera nitens, Brunner, op. cit. ii. p. 338 (1907).

Hab. Mexico (*Mus. Budapest*).

The following species are not quoted by Brunner in his Monograph; it is possible that they are synonymous with some of the forms recorded above from Central America:—

5. **Diapheromera velii,** Walsh.

Diapheromera velii, Walsh, Proc. Ent. Soc. Philad. iii. p. 410 (1864); Scudder, Psyche, ix. p. 189 (1901); Caudell, Proc. U.S. Nat. Mus. xxvi. p. 876, t. 58. fig. 5 (1903).

Hab. North America, United States.—Mexico.

6. **Diapheromera beckeri**, Kaup.

Diapheromera beckeri, Kaup, Berl. ent. Zeitschr. xv. p. 27 (1871).

Hab. Mexico.

7. **Diapheromera (?) bidens**, Kaup.

Diapheromera bidens, Kaup, t. c. p. 28 (1871).

Hab. Mexico.

8. **Diapheromera (?) strigiceps**, Kaup.

Diapheromera strigiceps, Kaup, t. c. p. 28.

Hab. Mexico.

Subfam. *PHIBALOSOMINÆ.*

Conspectus generum.

1. Femora antica superne haud compressa vel superne utrinque subæqualiter spinosa. (Sect. Eurycanthæ.)
   2. Femora antica haud oblique compressa, superne lobato-dentata . . Pericentrus, Redt.
   2′. Femora antica oblique compressa.
      3. Occiput bicorne.
         4. Apex abdominis ♀ rostratus . . . . . Rhynchacris, Redt.
         4′. Apex abdominis ♀ haud rostratus . . . . . Phantasis, Sauss.
      3′. Occiput spinosum vel tuberculatum, haud bicorne.
         4. Mesonotum strumosum. Alæ ♂ ♀ distinctæ, lobiformes . . Hypocyrtus, Redt.
         4′. Mesonotum haud strumosum. Alæ ♂ ♀ desunt . . . . . [Lamponius, Stål.]

1′. Femora antica superne plus minusve compressa rite inermia. (Sect. Phibalosomata.)
   2. Femora antica carina infera mediana margini antico appropinquata; femora 4 postica subtus ante apicem in carina externa dentibus vel spinis majoribus haud instructa. ♀ aptera.
      3. Metatarsus superne sulcatus . . . . . Clonistria, Stål.
      3′. Metatarsus superne carinatus vel cristatus.
         4. Segmentum medianum metanoto distincte brevius. ♂ apterus. Bostra, Stål.
         4′. Segmentum medianum metanoto æquilongum vel longius. ♂ plerumque alatus . . . . . Bacteria, Latr.
   2′. Femora antica carina infera mediana in medio sita; femora 4 postica margine laterali infero saltem externo ante apicem dentibus vel spinis majoribus 1–2 armato. ♂ ♀ alatus.
      3. Femora omnia foliaceo-lobata, antica cum tibiis undulato-dilatata . Pterinoxylus, Serv.
      3′. Femora antica cum tibiis haud foliaceo-lobata, 4 postica spinosa . Haplopus, Gray.

PERICENTRUS, Redt.

Pericentrus, Redtenbacher, op. cit. iii. p. 351 (1908).

Conspectus specierum.

1. Tibiæ omnes superne dentatæ. Femora 4 postica subrecta . . . *P. laciniatus*, Westw.
1′. Tibiæ 4 posticæ superne inermes. Femora 4 postica incurva . . . *P. spinoso-lobatus*, Redt.

1. **Pericentrus laciniatus**, Westw. (*Trychopeplus multilobatus*, Tab. VI. fig. 5, ♂.)

Ceroys laciniatus, Westwood, Thes. Ent. Oxon. p. 174, t. 32. fig. 4 (1874).
♂. *Pericentrus multilobatus*, Redtenbacher, op. cit. iii. p. 352 (1908).

Hab. Nicaragua (*Mus. Brit.; Mus. Oxford*, ♀ type); Costa Rica, Rio Sucio (*Rogers*); Panama, Volcan de Chiriqui 2500–4000 feet, Bugaba 800–1500 feet (*Champion*) [*coll. Godman & Salvin*: 4 ♂ ♂, including ♂ type].

I have carefully compared Westwood's type with the ♂ ♂ described by Redtenbacher and have no doubt that it is the true ♀ of *multilobatus* ♂. Redtenbacher is consequently in error in describing as the ♀ of this species a specimen from Peru; but the name *multilobatus* can be applied with propriety to the Peruvian insect, which is undoubtedly closely allied to the Central-American form. *P. laciniatus*, Westw., is not noticed in the monograph of Brunner and Redtenbacher, although a good figure of it was published.

2. **Pericentrus spinoso-lobatus**, Redt.

Pericentrus spinoso-lobatus, Redtenbacher, op. cit. iii. p. 353 (1908).

Hab. Panama, Chiriqui (*Champion, in coll. Godman & Salvin*: larva).

The insect figured in this work under the name of *Trychopeplus spinoso-lobatus* is, as already stated, *Diapheromera calcarata*, Burm. The type in the Vienna Museum was from an unknown locality.

RHYNCHACRIS, Redt.

Rhynchacris, Redtenbacher, op. cit. iii. p. 354 (1908).

Rhynchacris ornata, Redt. (Tab. VI. fig. 6, ♀.)

Rhynchacris ornata, Redtenbacher, op. cit. iii. p. 354 (1908).

Hab. Costa Rica, Rio Sucio (*Rogers, in coll. Godman & Salvin*: 1 ♀, type).

PHANTASIS, Sauss.

Phantasis, Saussure, Miss. Sci. Mex., Orthopt. p. 188 (1870) ; Redtenbacher, op. cit. iii. p. 354.

Conspectus specierum. ♀ ♀.

1. Mesonotum valde rugoso-tuberculatum, retrorsum valde coarctatum, margine laterali antice denticulato . . . . . *P. planula*, Westw.

1′. Mesonotum granulosum, margine laterali antice granulato, retrorsum parum sinuato-angustatum.

2. Femora 4 postica superne haud lobata. Segmentum anale transversum . . . . . [*P. saussurei*, Bol.]

2′. Femora 4 postica superne 3-lobata. Segmentum anale æquilongum ac latum . . . . . *P. lobata*, Redt.

1. **Phantasis planula,** Westw.

Phasma planulum, Westwood, Cat. Phasm. p. 34, t. 1. fig. 7 (1859).
Phantasis planula, Redtenbacher, op. cit. iii. p. 355 (1908).

Hab. ? Mexico (*Mus. Vienna*).—Antilles, San Domingo.

2. **Phantasis lobata,** Redt.

Phantasis lobata, Redtenbacher, op. cit. iii. p. 355 (1908).

Hab. Panama, Chiriqui (*Champion in coll. Godman & Salvin*: 1 ♀, type).

[3. **Phantasis saussurei,** Bol. (*P. subconstricta*, Tab. VI. fig. 2, ♀.)

Phantasis saussurei, Bolivar, Mém. Soc. Zool. Fr. i. p. 136 (1888); Redtenbacher, op. cit. iii. p. 355 (1908).

Hab. Antilles, Cuba, Port au Prince.]

HYPOCYRTUS, Redt.

Hypocyrtus, Redtenbacher, op. cit. iii. p. 355 (1908).

Conspectus specierum.

♂ ♂.

1. Segmentum anale profunde excisum, bilobatum . . . . . *H. scythrus*, Westw.

1′. Segmentum anale truncatum . . . . . *H. substrumosus*, Redt.

♀ ♀.

1. Segmentum abdominale 7 præcedentibus parum latius. Corpus vitta albida longitudinali ornatum . . . . . *H. vittatus*, Westw.

1′. Segmentum abdominale 7 valde dilatatum. Corpus vitta albida nulla.

2. Mesonotum struma spinulosa et tuberculata. Femora 4 postica superne dentibus 4 majoribus armata . . . . . *H. scythrus*, Westw.

2′. Mesonotum struma lobata vel foliaceo-dentata. Femora 4 postica superne lobis vel dentibus tantum 3 armata.
3. Lobi segmenti 7 margine integro. Femora antica subintegra . *H. postpositus*, Redt.
3′. Lobi segmenti 7 abdominis margine irregulariter crenulato. Femora antica obtuse dentata . . . . . *H. substrumosus*, Redt.

1. **Hypocyrtus vittatus,** Westw.

Anophelepis vittata, Westwood, Cat. Phasm. p. 69, t. 3. fig. 3 (1859).
Hypocyrtus vittatus, Redtenbacher, op. cit. iii. p. 356 (1908).

Hab. MEXICO (*Mus. Brit.*).

2. **Hypocyrtus scythrus,** Westw. (*H. strumosus*, Tab. VII. fig. 1.)

Anophelepis scythrus, Westwood, op. cit. p. 68, t. 2. fig. 3 (1859).
Hypocyrtus scythrus, Redtenbacher, op. cit. iii. p. 356 (1908).

Hab. MEXICO (*Mus. Brit., Mus. Paris, Mus. Vienna*).

3. **Hypocyrtus postpositus,** Redt.

Hypocyrtus postpositus, Redtenbacher, op. cit. iii. p. 356 (1908).

Hab. MEXICO (*Mus. Vienna*).

4. **Hypocyrtus substrumosus,** Redt. (Tab. VII. figg. 2 *a*, ♂; 2 *b*, ♀.)

Hypocyrtus substrumosus, Redtenbacher, op. cit. iii. p. 357 (1908).

Hab. MEXICO (*Mus. Paris*), Jalapa (*Mus. Hamburg*), Cordova (*Höge*), Rinconada (*Schaus*) [*coll. Godman & Salvin*: 1 ♀, 1 larva].

[LAMPONIUS, Stål.

Lamponius, Stål, Rec. Orth. iii. pp. 19, 74 (1875); Redtenbacher, op. cit. iii. p. 357 (1908).

1. **Lamponius guerini,** Sauss. (Tab. VI. fig. 3, ♀.)

Pygirhynchus guerini, Saussure, Miss. Sci. Mex., Orthopt. p. 169, t. 3. fig. 13 (1870).
Lamponius guerini, Redtenbacher, op. cit. iii. p. 358 (1908).

Hab. ANTILLES, Guadeloupe.]

CLONISTRIA, Stål.

Clonistria, Stål, Rec. Orth. iii. p. 25 (1875); Redtenbacher, op. cit. iii. p. 403 (1908).

Conspectus specierum.

1. ♂. Segmentum abdominale 8 gracile; lamina subgenitalis haud tumida. ♀. Pleuræ lævcs . . . . . *C. guadeloupensis,* Redt.
1′. ♂. Segmentum abdominale 8 valde tumidum; lamina subgenitalis cucullata. ♀. Pleuræ granulosæ . . . . . *C. guatemalensis,* Redt.

1. **Clonistria guadeloupensis,** Redt.

Clonistria guadeloupensis, Redtenbacher, op. cit. iii. p. 404 (1908).

Hab. GUATEMALA (*Mus. Stuttgart*: ♂ type; *Mus. Geneva*: ♀ type).—ANTILLES, Guadeloupe.

2. **Clonistria guatemalensis,** Redt.

Clonistria guatemalensis, Redtenbacher, op. cit. iii. p. 405 (1908).

Hab. GUATEMALA (*Mus. Geneva*: ♂ type; *Mus. Berlin*: ♀ type).

BOSTRA, Stål.

Bostra, Stål, Rec. Orth. iii. p. 24 (1875); Redtenbacher, op. cit. iii. p. 406 (1908).

Conspectus specierum.

♂ ♂.

1. Vertex cornubus duobus longis foliaceis instructa . . . . . *B. dorsuaria,* Stål.
1′. Vertex lævis.
  2. Femora 4 postica carinis omnibus inferis spinulosis . . . . . *B. podagrica,* Stål.
  2′. Femora 4 postica carinis inferis lateralibus muticis.
    3. Femora 4 postica carina infera mediana denticulata . . . . *B. amplectens,* Redt.
    3′. Femora 4 postica vel saltem postica carina infera mediana inermi.
      4. Cerci longissimi, cruciati. Lobi laterales segmenti 9 plus minusve contigui . . . . . *B. obtuse-cornuta,* Redt.
      4′. Cerci breves, haud cruciati. Lobi laterales segmenti 9 subtus haud contigui.
        5. Lamina subgenitalis fornicata. Lobi laterales segmenti 9 rotundati. . . . . *B. championi,* Redt.
        5′. Lamina subgenitalis acute gibbosa. Lobi laterales segmenti 9 margine recto . . . . . *B. mirata,* Redt.; *B. jaliscensis,* Rehn; *B. incompta,* Rehn.

♀ ♀.

1. Vertex cornubus 2 auriformibus compressis obsitus.
  2. Femora 4 postica subtus mutica . . . . . *B. dorsuaria,* Stål.
  2′. Femora 4 postica subtus basi lobata . . . . . *B. lobata,* Redt.

1′. Vertex lævis vel spinis vel tuberculis 2 obsitus.
  2. Vertex tuberculatus vel bispinosus. . . .
    3. Vertex spinis vel tuberculis 2 acuminatis, acutis instructus.
      4. Pleuræ spinulosæ vel acute tuberculatæ. . . .
        5. Metatarsus simplex . . . . . *B. obtuse-cornuta,* Redt.
        5′. Metatarsus lobatus . . . . . *B. magistralis,* Redt.
      4′. Pleuræ læves vel granulosæ vel obtuse tuberculatæ.
        5. Femora 4 postica carina infera mediana mutica . . . . *B. longe-operculata,* Redt.

5′. Femora 4 postica carina infera mediana apice 5–7 spinulosa . . . . . *B. godmani,* Redt.
3′. Vertex obtuse tuberculatus. (Metatarsus lobatus.) . . . . *P. saussurei,* Redt.
2′. Vertex lævis vel granulosus.
3. Femora 4 postica carina infera mediana denticulata.
4. Pectus læve. Caput deplanatum . . . . . *B. procoppi,* Redt.
4′. Pectus granulosum. Caput cylindricum . . . . . *B. tridenticulata,* Redt.
3′. Femora 4 postica carina infera mediana mutica.
4. Vertex granulosus. Mesonotum dense granulosum . . . *B. similis,* Redt.
4′. Vertex lævis. Mesonotum remote granulosum . . . . *B. margaritata,* Redt.
Species incertæ sedis . . . . . *B. remiformis,* Rehn; *B. jugalis,* Rehn; *B. martini,* Griff.

1. **Bostra dorsuaria,** Stål. (Tab. VI. figg. 1, 1 *a*, ♂.)

Bostra dorsuaria, Stål, Rec. Orth. iii. p. 79 (1875); Redtenbacher, op. cit. iii. p. 408 (1908).

Hab. Panama (*Mus. Stockholm*), Chiriqui (*Champion, in coll. Godman & Salvin*: 1 ♀).

2. **Bostra lobata,** Redt.

Bostra lobata, Redtenbacher, op. cit. iii. p. 408 (1908).

Hab. Panama, Chiriqui (*Champion, in coll. Godman & Salvin*: 1 ♀, type).

3. **Bostra podagrica,** Stål.

Bostra podagrica, Stål, Rec. Orth. iii. p. 79 (1875); Redtenbacher, op. cit. iii. p. 409 (1908).

Hab. Panama (*Mus. Stockholm*).

4. **Bostra amplectens,** Redt. (Tab. V. fig. 1, ♂.)

Bostra amplectens, Redtenbacher, op. cit. iii. p. 409 (1908).

Hab. Costa Rica, Caché (*Rogers, in coll. Godman & Salvin*: 1 ♂, type).

5. **Bostra obtuse-cornuta,** Redt.

Bostra obtuse-cornuta, Redtenbacher, op. cit. iii. p. 409 (1908).

Hab. Guatemala (*Mus. Berlin, Mus. Geneva*); Costa Rica (*Mus. Vienna*).

6. **Bostra magistralis,** Redt.

Bostra magistralis, Redtenbacher, op. cit. iii. p. 410 (1908).

Hab. Guatemala, Panzos in Vera Paz (*Conradt, in coll. Godman & Salvin*: 1 ♀, type).

7. **Bostra championi,** Redt.

Bostra championi, Redtenbacher, op. cit. iii. p. 410 (1908).

Hab. Guatemala, Cahabon in Vera Paz (*Champion, in coll. Godman & Salvin*: 1 ♂, type).

8. **Bostra mirata,** Redt.

Bostra mirata, Redtenbacher, op. cit. iii. p. 410 (1908).

Hab. GUATEMALA (*coll. Bolivar*).

9. **Bostra longe-operculata,** Redt.

Bostra longeoperculata, Redtenbacher, op. cit. iii. p. 411 (1908).

Hab. GUATEMALA (*Mus. Paris*).

10. **Bostra godmani,** Redt.

Bostra godmani, Redtenbacher, op. cit. iii. p. 411 (1908).

Hab. GUATEMALA, Zapote (*Champion, in coll. Godman & Salvin*: 1 ♀); NICARAGUA (*Mus. Vienna*); COSTA RICA (*Mus. Geneva*).

11. **Bostra saussurei,** Redt.

Bostra saussurei, Redtenbacher, op. cit. iii. p. 411 (1908).

Hab. MEXICO (*Mus. Budapest*).

12. **Bostra procoppi,** Redt.

Bostra procoppi, Redtenbacher, op. cit. iii. p. 411 (1908).

Hab. MEXICO (*Mus. Budapest*).

13. **Bostra tridenticulata,** Redt.

Bostra tridenticulata, Redtenbacher, op. cit. iii. p. 411 (1908).

Hab. MEXICO, Acaguizotla in Guerrero 3500 feet (*H. H. Smith, in coll. Godman & Salvin*: 1 ♀, type).

14. **Bostra similis,** Redt.

Bostra similis, Redtenbacher, op. cit. iii. p. 412 (1908).

Hab. MEXICO, Jalisco (*Schumann, in coll. Godman & Salvin*: 1 ♂, type, 1 ♀ larva).

15. **Bostra margaritata,** Redt.

Bostra margaritata, Redtenbacher, op. cit. iii. p. 412 (1908).

Hab. MEXICO, Sierra de Nayarit (*Mus. Paris*).

16. **Bostra remiformis,** Rehn.

Bostra remiformis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 58; Redtenbacher, op. cit. iii. p. 412 (1908).

Hab. COSTA RICA, Piedras Negras (*U.S. Nat. Mus.*).

17. **Bostra jaliscensis,** Rehn.

Bostra jaliscensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 514.

Hab. MEXICO, Jalisco, Tuxpan (*Mus. Acad. Nat. Sci. Philadelphia*).

18. **Bostra incompta,** Rehn.

Bostra incompta, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 57.

Hab. COSTA RICA, San Carlos (*U.S. Nat. Mus.*).

19. **Bostra jugalis,** Rehn.

Bostra jugalis, Rehn, Invertebrata Pacifica, i. p. 72 (Jan. 30, 1905).

Hab. NICARAGUA, Chinandega (*Mus. Acad. Nat. Sci. Philadelphia*).

20. **Bostra martini,** Griff.

Bostra martini, Griffini, Boll. Mus. Torino, xi. no. 236, p. 10 (1896).

Oncotophasma martini, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 59.

Hab. COSTA RICA, San Carlos (*Mus. Acad. Nat. Sci. Philadelphia*).—COLOMBIA.

This species is considered by Rehn to be the type of a new genus, *Oncotophasma*, characterized by the swollen metathorax and inflated, strongly armed femora.

BACTERIA, Latr.

Bacteria, Latreille, Fam. nat. du Règne Anim. p. 412 (1825); Redtenbacher, op. cit. iii. p. 412 (1908).

Conspectus specierum.

♂ ♂.

1. Alatæ.
   2. Alæ segmentum medianum multo superantes. Vertex bituberculatus . . . . . [*B. ploiaria*, Westw.]
   2′. Alæ segmentum medianum vix superantes. Vertex muticus . . *B. subvolans*, Redt.

1′. Apteræ.
   2. Segmentum dorsale 9 abdominis lobis lateralibus triangulariter productis . . . . . *B. nodulosa*, Redt.
   2′. Segmentum dorsale 9 marginibus lateralibus rectis vel rotundatis.
      3. Segmentum anale apice bilobatum . . . . . *B. nova*, Redt.
      3′. Segmentum anale rotundatum . . . . . *B. horni*, Redt.

♀ ♀.

1. Vertex muticus vel minutissime bituberculatus.
   2. Femora 4 postica mutica . . . . . *B. nova*, Redt.
   2′. Femora 4 postica lobulata . . . . . *B. foliolata*, Redt.

1′. Vertex bispinosus vel bituberculatus vel bicornis.
   2. Vertex spinis vel tuberculis 2–4 instructus.
      3. Vertex inter oculos 4-spinosus . . . . . *B. 4-spinosa*, Redt.

3′. Vertex bispinosus vel bituberculatus vel bicornis.
4. Vertex bispinosus vel conice bituberculatus.
5. Vertex bispinulosus . . . . . *B. vosseleri*, Redt.
5′. Vertex conice bituberculatus . . . . . *B. horni*, Redt.
4′. Vertex cornubus 2 crassis, cylindricis, apice obtusis.
5. Mesonotum inæqualiter tuberculatum. Statura majore . . *B. burkarti*, Sauss.
5′. Mesonotum granulosum. Statura minore . . . . . *B. zehntneri*, Redt.
2′. Vertex cornubus 2 apice compressis, 1–2-denticulatis.
3. Vertex inter cornua bispinosus . . . . . *B. frustrans*, Redt.
3′. Vertex inter cornua inermis.
4. Femora 4 postica haud lobata . . . . . *B. frey-gessneri*, Redt.
4′. Femora 4 plus minusve lobata.
5. Lobi femorum 4 posticorum simplices vel obtuse bilobati . *B. bicornis*, Stoll.
5′. Lobi femorum 4 posticorum compositi . . . . . *B. ætola*, Westw.
Species incertæ sedis . . . . . *B. sartoriana*, Kaup.

1. [**Bacteria ploiaria,** Westw. (*Phanocles ploiaria*, Tab. VII. fig. 3 *a*, ♂.)
Phibalosoma ploiaria, Westwood, Cat. Phasm. p. 79, t. 13. fig. 4 (1859).
Bacteria ploiaria, Redtenbacher, op. cit. iii. p. 416 (1908).

Hab. North America, West coast.—Dutch Guiana.]

2. **Bacteria subvolans,** Redt.
Bacteria subvolans, Redtenbacher, op. cit. iii. p. 416 (1908).

Hab. Panama, Chiriqui (*Champion, in coll. Godman & Salvin*: 1 ♂, type).

3. **Bacteria nodulosa,** Redt.
Bacteria nodulosa, Redtenbacher, op. cit. iii. p. 416 (1908).

Hab. Panama (*Mus. Vienna*).—Guiana; Brazil; Antilles.

4. **Bacteria nova,** Redt.
Bacteria nova, Redtenbacher, op. cit. iii. p. 417 (1908).

Hab. Mexico (*Mus. Vienna*); Guatemala (*Mus. Stuttgart*).

5. **Bacteria foliolata,** Redt.
Bacteria foliolata, Redtenbacher, op. cit. iii. p. 418 (1908).

Hab. Mexico (*Mus. Vienna*).

6. **Bacteria 4-spinosa,** Redt.
Bacteria 4-spinosa, Redtenbacher, op. cit. iii. p. 419 (1908).

Hab. Mexico, Mazatlan (*Mus. Hamburg*).

7. **Bacteria vosseleri,** Redt.

Bacteria vosseleri, Redtenbacher, op. cit. iii. p. 419 (1908).

Hab. Guatemala (*Mus. Stuttgart*).

8. **Bacteria horni,** Redt.

Bacteria horni, Redtenbacher, op. cit. iii. p. 419 (1908).

Hab. Mexico, San Gerónimo (*Mus. Vienna*, *Mus. Budapest*).

9. **Bacteria burkarti,** Sauss. (*Phanocles burkartii*, Tab. VII. fig. 3 *b*, ♀.)

Bacteria burkarti, Saussure, Rev. Zool. (2) xx. p. 65 (1868); Miss. Sci. Mex., Orthopt. p. 151, t. 3. fig. 6 (1872); Redtenbacher, op. cit. iii. p. 421 (1908).

Hab. Mexico (*Mus. Geneva*), Atoyac in Vera Cruz (*Schumann*, *in coll. Godman & Salvin*); Panama, Chiriqui (*Champion*, *in coll. Godman & Salvin*).—Colombia.

10. **Bacteria zehntneri,** Redt.

Bacteria zehntneri, Redtenbacher, op. cit. iii. p. 421 (1908).

Hab. Mexico, Vera Cruz (*H. H. Smith*, *in coll. Godman & Salvin*); Guatemala (*Mus. Geneva*: 1 ♀, type.)

11. **Bacteria frustrans,** Redt.

Bacteria frustrans, Redtenbacher, op. cit. iii. p. 421 (1908).

Hab. Mexico, Colima (*Mus. Vienna*).

12. **Bacteria frey-gessneri,** Redt.

Bacteria frey-gessneri, Redtenbacher, op. cit. iii. p. 421 (1908).

Hab. Guatemala (*Mus. Geneva*).

13. **Bacteria bicornis,** Stoll.

Phasma bicornis, Stoll, Repr. Spectres, Phasmes, etc. p. 46, t. 15. fig. 57 (1813).

Bacteria bicornis, Redtenbacher, op. cit. iii. p. 422 (1908).

Hab. Mexico, Guaymas (*Mus. Hamburg*).—Antilles.

14. **Bacteria ætola,** Westw.

Bacteria ætola, Westwood, Cat. Phasm. p. 27, t. 22. fig. 3 (1859); Redtenbacher, op. cit. iii. p. 422 (1908).

Hab. Mexico (*Mus. Oxford*, *Mus. Paris*).

15. **Bacteria sartoriana,** Kaup.

Bacteria sartoriana, Kaup, Berl. ent. Zeitschr. xv. p. 29 (1871).

Hab. Mexico.

PTERINOXYLUS, Serv.

Pterinoxylus, Serville, Hist. Nat. Ins. Orth. p. 226 (1839); Redtenbacher, op. cit. iii. p. 427 (1908).

Conspectus specierum.

1. Segmentum abdominale 7 ♂ ♀ valde lobato-dilatatum . . . . . *P. difformipes*, Serv.
1′. Segmentum abdominale 7 ♂ ♀ haud vel leviter dilatatum . . . . *P. spinulosus*, Redt.

1. **Pterinoxylus difformipes**, Serv.

Pterinoxylus difformipes, Serv. op. cit. p. 227 (1839); Redtenbacher, op. cit. iii. p. 428 (1908).

Hab. Guatemala, Chacoj in Vera Paz (*Champion, in coll. Godman & Salvin*); Costa Rica (*Mus. Paris*); Panama, Chiriqui (*Champion, in coll. Godman & Salvin*).—Surinam; Brazil.

Represented in the Godman and Salvin collection by four larvæ only.

2. **Pterinoxylus spinulosus**, Redt.

Pterinoxylus spinulosus, Redtenbacher, op. cit. iii. p. 428, t. 20. fig. 3 (1908).

Hab. Panama, Chiriqui (*Champion, in coll. Godman & Salvin, and Mus. Vienna*: 1 ♀ larva, ♀ type).

HAPLOPUS, Gray.

Haplopus, Gray, Syn. Phasm. p. 34 (1835); Redtenbacher, op. cit. iii. p. 429 (1908).

1. **Haplopus perarmatus**, Redt.

Haplopus perarmatus, Redtenbacher, op. cit. iii. p. 431 (1908).

Hab. Nicaragua (*Mus. Berlin*).

Redtenbacher suggests that this species is the male of *H. obtusus*, Redt., which he records from "Santa Cruz" without further specification, but presumably the Antillean island of that name is intended.

Sect. AREOLATÆ.

Subfam. *PYGIRHYNCHINÆ*.

Conspectus generum.

1. Abdominis segmenta angulis posticis haud foliaceo-productis.
   2. Antennarum articulus primus latus, depressus, inermis.
      3. Corpus ♀ tectiforme, carinatum. Segmentum anale ♀ rostriforme. Meso- et metanotum ♂ cum abdomine haud spinosa. Pygirhynchus, Serv.
      3′. Corpus ♀ subteres, indistincte carinatum. Segmentum anale ♀ haud rostriforme. Meso- et metanotum ♂ cum abdomine saltem partim spinosa . . . . . Ceroys, Serv.

2′. Antennarum articulus primus parum depressus, apice dentibus vel tuberculis 1–2 armatus . . . . . [ACANTHOCLONIA, Redt.]
1′. Abdominis segmenta angulis posticis foliaceo-productis, lobiformibus. [SETOSA, Redt.]

PYGIRHYNCHUS, Serv.

Pygirhynchus, Serville, Hist. Nat. Ins. Orthopt. p. 260 (1839) ; Redtenbacher, op. cit. i. p. 57 (1906).

1. **Pygirhynchus subfoliatus,** Serv.

Pygirhynchus subfoliatus, Serville, op. cit. p. 261 (1839) ; Redtenbacher, op. cit. i. p. 58 (1906).

Hab. MEXICO (*Mus. Paris*).—BRAZIL.

Species incertæ sedis.

2. **Pygirhynchus capreolus,** Kaup.

Ceroys capreolus, Kaup, Berl. ent. Zeitschr. xv. p. 34 (1871).
Pygirhynchus capreolus, Redtenbacher, op. cit. i. p. 59 (1906).

Hab. MEXICO.

CEROYS, Serv.

Ceroys, Serville, Hist. Nat. Ins. Orthopt. p. 262 (1839) ; Redtenbacher, op. cit. i. p. 60 (1906).

Conspectus specierum. ♀ ♀.

1. Meso- et metanotum spinosa. Femora antica cum tibiis inermia . . *C. perfoliatus*, Gray.
1′. Meso- et metanotum in medio lobis validis 2 spinulosis instructa. Femora omnia cum tibiis dentata . . . . . *C. bigibbus*, Rehn.

1. **Ceroys perfoliatus,** Gray.

Cladomorphus perfoliatus, Gray, Syn. Phasm. p. 15 (1835).
Ceroys perfoliatus, Redtenbacher, op. cit. i. p. 60 (1906).

Hab. MEXICO (*Mus. Paris*).—GUIANA ; BRAZIL.

2. **Ceroys bigibbus,** Rehn.

Ceroys bigibbus, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 48.

Hab. NICARAGUA.

[ACANTHOCLONIA, Stål.

Acanthoclonia, Stål, Bih. Svenska Akad. ii. (17) p. 8 (1875) ; Redtenbacher, op. cit. i. p. 62 (1906).

1. **Acanthoclonia erinacea,** Redt. (*Acanthoclina crinaceus*, Tab. VIII. fig. 1, ♀.)

Acanthoclonia erinaceus, Redtenbacher, op. cit. i. p. 62 (1906).

Hab. COLOMBIA, Antioquia.]

[SETOSA, Redt.

Setosa, Redtenbacher, op. cit. i. p. 65 (1906).

1. **Setosa versicolor**, Redt. (Tab. VIII. fig. 2.)

Setosa versicolor, Redtenbacher, op. cit. i. p. 66 (1906).

Hab. COLOMBIA, Cauca, Popayan.]

Subfam. *ANISOMORPHINÆ.*

Conspectus generum,

1. Femora omnia superne distincta carinata. Antennarum articulus primus depressus, intus carinatus . . . . . PARANISOMORPHA, Redt.

1′. Femora antica recta, superne teretia vel obtuse carinata. Antennarum articulus primus teres . . . . . AUTOLYCA, Stål.

PARANISOMORPHA, Redt.

Paranisomorpha, Redtenbacher, op. cit. i. p. 87 (1906).

1. **Paranisomorpha insignis**, Redt.

Paranisomorpha insignis, Redtenbacher, op. cit. i. p. 90 (1906).

Hab. COSTA RICA (*Mus. Geneva*, *Mus. Vienna*), Rio Sucio (*Rogers, in coll. Godman & Salvin*: 1 ♀).

AUTOLYCA, Stål.

Autolyca, Stål, Rec. Orth. iii. pp. 56, 95 (1875); Redtenbacher, op. cit. i. p. 94 (1906).

1. **Autolyca pallidicornis**, Stål.

Autolyca pallidicornis, Stål, op. cit. iii. p. 95 (1875); Redtenbacher, op. cit. i. p. 95, t. 3. figg. 18, 19.

Hab. BRITISH HONDURAS, Rio Sarstoon (*Blancaneaux, in coll. Godman & Salvin*); GUATEMALA (*Mus. Vienna*, *Mus. Hamburg*, *coll. Bolivar*), Chinautla, Capetillo, Zapote (*Champion, in coll. Godman & Salvin*), Vera Paz (*Mus. Paris*); SALVADOR (*Mus. Vienna*). —COLOMBIA.

There are three males and one female of this species in the collection before me.

Subfam. *PHASMINÆ.*

Conspectus generum.

1. Femora 4 postica carina infera mediana nulla vel obtusa, inermi.
   2. Femora teretia vel leviter carinata. Ocelli semper adsunt. (Sect. Stratocles.)
      3. Femora antica basi recta, superne teretia, haud vel indistincte carinulata.
         4. Occiput fortiter globoso-tumidum . . . . . Eucles, Redt.
         4′. Occiput haud globoso-tumidum . . . . . Stratocles, Stål.
      3′. Femora antica basi distincte incurva.
         4. Femora antica carina supera interna nulla vel haud elevata, subtus carina mediana nulla vel obtusissima.
            5. Tibiæ omnes superne subtusque teretes.
               6. Mesonotum haud sulcatum. Statura major, robustior . Olcyphides, Griff.
               6′. Mesonotum sulcatum. Statura minor, tenerrima . . . Tenerella, Redt.
            5′. Tibiæ anticæ superne sulcatæ vel bicarinulatæ.
               6. Femora postica teretia vel subtilissime bicarinulata . . Agrostia, Redt.
               6′. Femora postica distincte sulcata vel bicarinata.
                  7. Tibiæ posticæ superne bicarinulatæ vel sulcatæ . . . Brizoides, Redt.
                  7′. Tibiæ posticæ superne teretes . . . . . Holca, Redt.
         4′. Femora antica carina supera interna (præcipue in ♀) distincte elevata, subtus carina mediana acuta instructa . . . . . Chlorophasma, Redt.
   2′. Femora antica saltem oblique compressa, acute et distincte carinata. Ocelli nulli. (Sect. Prisopi.)
      3. Occiput globosum, læve vel bispinosum . . . . . Damasippus, Stål.
      3′. Occiput haud globosum, cum thorace granulatum et tuberculatum. Prisopus, Serv.
1′. Femora 4 postica carina infera mediana distincta, inermi vel obtusiore et spinulosa.
   2. Elytra alæque nulla. Femora triquetra. (Sect. Donusæ.) . . . Donusa, Stål.
   2′. Elytra alæque plerumque explicatæ. Femora 4 postica saltem carinis superis distincte remotis.
      3. Elytra brevia, rotundato-ovata. Femora antica haud vel parum compressa. Ocelli adsunt. (Sect. Phasmata.)
         4. Occiput planiusculum.
            5. Femora 4 postica simplicia . . . . . Phasma, Serv.
            5′. Femora 4 postica apice clavata . . . . . Pseudophasma, Bol.
         4′. Occiput gibbosum, bicorne . . . . . [Euphasma, Redt.]
      3′. Elytra longiora, lanceolata. Femora antica præcipue basin versus distincte compressa. Ocelli variabiles. (Sect. Prexaspes.)
         4. Occiput haud auritum.
            5. Elytra alæque perfectæ explicatæ vel abbreviatæ.
               6. Mesonotum gracile, teres, carinis lateralibus nullis.
                  7. Alæ abbreviatæ . . . . . Planudes, Stål.

7′. Alæ elongatæ.	
8. Tuberculum elytrorum distinctum, compressum, rotundatum vel undulatum	Isagoras, Stål.
8′. Tuberculum elytrorum obsoletum vel nullum . . .	Perliodes, Redt.
6′. Mesonotum brevius et latius, depressum, carinis lateralibus distinctis.	
7. Elytra tuberculo obsoleto vel nullo. Pronotum postice spinis recurvis nullis	Metriotes, Westw.
7′. Elytra tuberculo obtuso sed distincto. Pronotum rite spinis 2 recurvis validis instructum	Xerosoma, Serv.
5′. Elytra alæque desunt	[Xera, Redt.]
4′. Occiput cristis 2 elevatis, spinosis, auriformibus	[Creoxylus, Serv.]

DONUSA, Stål.

Donusa, Stål, Rec. Orth. iii. pp. 54, 94 (1875) ; Redtenbacher, op. cit. i. p. 98.

1. **Donusa prolixa,** Stål.

Donusa prolixa, Stål, Bih. Svensk. Akad. iii. (17) p. 16 (1875) ; op. cit. iii. p. 54 (1875) ; Redtenbacher, op. cit. i. p. 99, t. 4. fig. 11 (1906).

Hab. Mexico, Tampico, Jalapa (*Mus. Hamburg ; coll. Bolivar*).—Brazil ; Chili.

EUCLES, Redt.

Eucles, Redtenbacher, op. cit. i. p. 101 (1907).

Conspectus specierum.

1. Pedes toti nigri	*E. bifasciatus,* Redt.
1′. Pedes nigri, flavo-annulati	[*E. imperialis,* Redt.]

1. **Eucles bifasciatus,** Redt.

Eucles bifasciatus, Redtenbacher, op. cit. i. p. 102 (1906).

Hab. Costa Rica (*Mus. Geneva*).

[2. **Eucles imperialis,** Redt. (Tab. VIII. figg. 3 *a*, *b*, ♀ ; 3 *c*, ♂ .)

Eucles imperialis, Redtenbacher, op. cit. i. p. 101 (1906).

Hab. Colombia ; Peru.]

STRATOCLES, Stål.

Stratocles, Stål, Rec. Orth. iii. p. 96 (1875) ; Redtenbacher, op. cit. i. p. 102 (1906).

Conspectus specierum.

1. Femora omnia obscure annulata.
   2. Elytra nigra, flavo-reticulata . . . . . *S. cinctipes*, Stål.
   2′. Elytra ochracea, apice viridia . . . . . *S. costaricensis*, Rehn.

1′. Femora haud annulata.
   2. Femora tota vel maxima parte nigro-lineata . . . . . *S. forcipatus*, Bol.
   2′. Femora dimidia parte apicali nigro-lineata.
      3. Tibiæ posticæ ♂ superne virides, apice cum tarsis nigræ, ♀ totæ fusco-ochraceæ . . . . . *S. multilineatus*, Rehn.
      3′. Tibiæ posticæ totæ vel magna parte flavæ . . . . . *S. soror*, Rehn.

Species incertæ sedis . . . . . *S. cryptochloris*, Rehn.

1. **Stratocles cinctipes,** Stål.

Stratocles cinctipes, Stål, Rec. Orth. iii. p. 96 (1875) ; Redtenbacher, op. cit. i. p. 103 (1906).

Hab. Panama (*Mus. Stockholm, Mus. Vienna*).

2. **Stratocles costaricensis,** Rehn.

Stratocles costaricensis, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 93; Redtenbacher, op. cit. i. p. 103 (1906).

Hab. Costa Rica (*U.S. Nat. Mus.*).

3. **Stratocles forcipatus,** Bol.

Stratocles forcipatus, Bolivar, Act. Soc. Esp. Hist. Nat. 1896, p. 11 ; Redtenbacher, op. cit. i. p. 105 (1906).

Hab. Panama, Bugaba (*Champion, in coll. Godman & Salvin*: 1 ♂), Chiriqui (*Mus. Vienna*).— Colombia ; Amazons ; Peru.

4. **Stratocles multilineatus,** Rehn.

Stratocles multilineatus, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 91 ; Redtenbacher, op. cit. i. p. 105 (1906).

Hab. Costa Rica, San Carlos (*U.S. Nat. Mus.*).—Upper Amazons.

5. **Stratocles soror,** Redt.

Stratocles soror, Redtenbacher, op. cit. i. p. 106 (1906).

Hab. Nicaragua, Chontales (*Janson, in coll. Godman & Salvin*: 1 ♂, type).

6. **Stratocles (?) cryptochloris,** Rehn.

Pseudophasma cryptochloris, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 98.

? *Stratocles cryptochloris*, Redtenbacher, op. cit. i. p. 107 (1906).

Hab. Costa Rica, San Carlos (*U.S. Nat. Mus.*).

OLCYPHIDES, Griff.

Olcyphides, Griffini, Zool. Anz. xxii. p. 89 (1899) ; Redtenbacher, op. cit. i. p. 108 (1906).

1. **Olcyphides viridipes,** Rehn.

Olcyphides viridipes, Rehn, Proc. Acad. Nat. Sci. Philad. 1905, p. 798.

Hab. Costa Rica, Caché, 1000 metres (*Mus. Acad. Nat. Sci. Philadelphia*).

This species is not included in Brunner and Redtenbacher's Monograph.

TENERELLA, Redt.

Tenerella, Redtenbacher, op. cit. i. p. 109 (1906).

1. **Tenerella tenerrima,** Redt. (Tab. VIII. fig. 4.)

Tenerella tenerrima, Redtenbacher, op. cit. i. p. 109 (1906).

Hab. Panama, Bugaba (*Champion, in coll. Godman & Salvin* : 1 ♀ , type).—Colombia (*Mus. Vienna*).

AGROSTIA, Redt.

Agrostia, Redtenbacher, op. cit. i. p. 110 (1906).

1. **Agrostia amœna,** Redt.

Agrostia amœna, Redtenbacher, op. cit. i. p. 110 (1906).

Hab. Panama, Volcan de Chiriqui, Bugaba (*Champion, in coll. Godman & Salvin* : 3 ♂ ♂ , including the type).

BRIZOIDES, Redt.

Brizoides, Redtenbacher, op. cit. i. p. 112 (1906).

Conspectus specierum.

1. Elytra cum area antica alarum fusco-tincta. Alæ area postica flavescente. *B. nigricornis,* Redt.
1′. Elytra cum area antica alarum haud fusco-signata. Alæ area postica albida.
2. Antennæ virides, nigro-lineatæ. Pedes unicolores, viridi-flavescentes. *B. graminea,* Redt.
2′. Antennæ unicolores flavescentes. Femora annulo subapicali cum basi et apice tibiarum nigro . . . . . *B. lacteipennis,* Redt.

1. **Brizoides nigricornis,** Redt. (*Briza nigricornis,* Tab. VIII. fig. 5.)

Brizoides nigricornis, Redtenbacher, op. cit. i. p. 112 (1906).

Hab. Panama, Chiriqui (*Mus. Vienna* : type), Bugaba (*Champion, in coll. Godman & Salvin* : 4 ♂ ♂).

2. **Brizoides graminea,** Redt.

Brizoides graminea, Redtenbacher, op. cit. i. p. 113 (1906).

Hab. PANAMA, Bugaba (*Champion, in coll. Godman & Salvin*: 1 ♀, type).

3. **Brizoides lacteipennis,** Redt.

Brizoides lacteipennis, Redtenbacher, op. cit. i. p. 113 (1906).

Hab. PANAMA, Bugaba (*Champion, in coll. Godman & Salvin*: 1 ♂, 1 ♀; *Mus. Vienna*).—UPPER AMAZONS (*Mus. Vienna*: type).

HOLCA, Redt.

Holca, Redtenbacher, op. cit. i. p. 114 (1906).

1. **Holca proxima,** Redt.

Holca proxima, Redtenbacher, op. cit. i. p. 114 (1906).

Hab. COSTA RICA, Rio Sucio (*Rogers, in coll. Godman & Salvin*: 1 ♀, type).

CHLOROPHASMA, Redt.

Chlorophasma, Redtenbacher, op. cit. i. p. 114 (1906).

1. **Chlorophasma hyalinum,** Redt. (Tab. VIII. fig. 6.)

Chlorophasma hyalina, Redtenbacher, op. cit. i. p. 114 (1906).

Hab. PANAMA, Bugaba (*Champion, in coll. Godman & Salvin*: 1 ♀, type).

PHASMA, Serv.

Phasma, Serville, Enc. Méth. x. p. 100 (1828); Redtenbacher, op. cit. i. p. 118 (1906).

Conspectus specierum.

1. Mesonotum flavum, fusco-signatum. Alarum area antica flava, fusco-venosa . . . . . *P. annulipes,* Redt.
1′. Mesonotum fuscum. Alarum area antica nigra . . . . . *P. perezii,* Bol.

1. **Phasma annulipes,** Redt.

Phasma annulipes, Redtenbacher, op. cit. i. p. 119 (1906).

Hab. MEXICO, Vera Cruz (*Mus. Paris*).—BOLIVIA.

2. **Phasma perezi,** Bol.

Phasma perezii, Bolivar, An. Soc. Españ. x. p. 479 (1881); Redtenbacher, op. cit. i. p. 120 (1906).

Hab. MEXICO (*Mus. Paris*); COSTA RICA (*Mus. Berlin, Mus. Hamburg*); PANAMA

(*Mus. Oxford*), Bugaba, Chiriqui (*Champion, in coll. Godman & Salvin*), Colon (*Mus. Vienna*), Darien (*Mus. Paris*).—COLOMBIA; BRITISH GUIANA.

A long series. This species is undoubtedly very close to *P. menius*, Westw.

[EUPHASMA, Redt.

Euphasma, Redtenbacher, op. cit. i. p. 125 (1906).

1. **Euphasma bicorne,** Redt. (Tab. VIII. fig. 7.)

Euphasma bicorne, Redtenbacher, op. cit. i. p. 125 (1906).

Hab. COLOMBIA.]

PSEUDOPHASMA, Bol.

Pseudophasma, Bolivar, Act. Soc. Españ. 1896, p. 13; Redtenbacher, op. cit. i. p. 123 (1906).

1. **Pseudophasma (?) phaëton,** Rehn.

Pseudophasma phæton, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 95.

Hab. COSTA RICA, San Carlos.

The systematic position of this species is very uncertain.

PLANUDES, Stål.

Planudes, Stål, Rec. Orth. iii. pp. 59, 98 (1875); Redtenbacher, op. cit. i. p. 131 (1906).

1. **Planudes crenulipes,** Rehn.

Planudes crenulipes, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 100.

Hab. COSTA RICA, Tucurrique.

ISAGORAS, Stål.

Isagoras, Stål, Rec. Orth. iii. p. 98 (1875); Redtenbacher, op. cit. i. p. 133 (1906).

Conspectus specierum.

1. Elytra tuberculo lato compresso, abrupte elevato, varicoso-undulato . . *I. dentipes*, Redt.
1′. Elytra tuberculo rotundato, haud undulato . . . . . *I. plagiatus*, Redt.

1. **Isagoras dentipes,** Redt.

Isagoras dentipes, Redtenbacher, op. cit. i. p. 134 (1906).

Hab. PANAMA, Chiriqui (*Champion, in coll. Godman & Salvin, and Mus. Vienna*: 3 ♂ ♂, including the type).

2. **Isagoras plagiatus,** Redt.

Isagoras plagiatus, Redtenbacher, op. cit. i. p. 135 (1906).

Hab. PANAMA, Volcan de Chiriqui (*Champion, in coll. Godman & Salvin*: 1 ♂).—COLOMBIA; BRAZIL; BOLIVIA.

PERLIODES, Redt.

Perliodes, Redtenbacher, op. cit. i. p. 136 (1906).

Conspectus specierum.

1. Mesonotum carinis 2 longitudinalibus, per sulcum divisis instructum. *P. grisescens*, Redt.
1′. Mesonotum haud sulcatum, teres vel unicarinatum . . . . . *P. nigrogranulosus*, Redt.

1. **Perliodes grisescens,** Redt.

Perliodes grisescens, Redtenbacher, op. cit. i. p. 137 (1906).

Hab. MEXICO (*Mus. Oxford*); PANAMA, Chiriqui (*Mus. St. Petersburg*).—SURINAM; BRAZIL.

2. **Perliodes nigrogranulosus,** Redt.

Perliodes nigrogranulosus, Redtenbacher, op. cit. i. p. 137 (1906).

Hab. MEXICO, Colima (*coll. Rolle*); PANAMA, Paya in Darien (*Mus. Paris*).—BRAZIL.

METRIOTES, Westw.

Metriotes, Westwood, Cat. Phasm. p. 158 (1859); Redtenbacher, op. cit. i. p. 138 (1906).

Conspectus specierum.

1. Mesonoti dorsum utrinque spinis majoribus armatum . . . . . [*M. armatus*, Redt.]
1′. Mesonoti dorsum latere tuberculatum.
   2. Alæ tessellatæ . . . . . *M. diocles*, Westw.
   2′. Alæ unicolores . . . . . *M. iphicles*, Redt.

[1. **Metriotes armatus,** Redt. (Tab. VIII. fig. 8.)

Metriotes armatus, Redtenbacher, op. cit. i. p. 139 (1906).

Hab. COLOMBIA; BRAZIL.]

2. **Metriotes diocles,** Westw.

Metriotes diocles, Westwood, Cat. Phasm. p. 161, t. 15. fig. 1 (1859); Redtenbacher, op. cit. i. p. 140 (1906).

Hab. PANAMA, Chiriqui (*Mus. Brit.*).—COLOMBIA; ECUADOR.

3. **Metriotes iphicles,** Redt.

Metriotes iphicles, Redtenbacher, op. cit. i. p. 140 (1906).

Hab. HONDURAS, San Pedro Sula (*Mus. Vienna*: type); PANAMA, Bugaba (*Champion, in coll. Godman & Salvin*: 1 ♀).

[CREOXYLUS, Serv.

Creoxylus, Serville, Hist. Nat. Ins. Orth. p. 265 (1889); Redtenbacher, op. cit. i. p. 141 (1906).

1. **Creoxylus spinosus,** Fabr. (Tab. VIII. figg. 9 *a*, ♂; 9 *b*, *c*, ♀.)

Mantis spinosa, Fabricius, Syst. Ent. p. 274 (1775).

Creoxylus spinosa, Redtenbacher, op. cit. i. p. 142 (1906).

Hab. COLOMBIA; GUIANA; TRINIDAD.]

XEROSOMA, Serv.

Xerosoma, Serville, Hist. Nat. Ins. Orthopt. p. 274 (1839); Redtenbacher, op. cit. i. p. 143 (1906).

Conspectus specierum.

1. Occiput inerme . . . . . *X. vignieri,* Redt.
1′. Occiput 4–12-spinosum . . . . . *X. glyptomerion,* Rehn.

1. **Xerosoma vignieri,** Redt.

Xerosoma vignieri, Redtenbacher, op. cit. i. p. 144 (1906).

Hab. PANAMA, Paya in Darien (*Mus. Paris*).

2. **Xerosoma glyptomerion,** Rehn.

Xerosoma glyptomerion, Rehn, Proc. Acad. Nat. Sci. Philad. 1904, p. 101; Redtenbacher, op. cit. i. p. 145 (1906).

Hab. COSTA RICA, San Carlos.

[XERA, Redt.

Xera, Redtenbacher, op. cit. i. p. 145 (1906).

1. **Xera debilis,** Redt. (Tab. VIII. fig 10.)

Xera debilis, Redtenbacher, op. cit. i. p. 146 (1906).

Hab. COLOMBIA; VENEZUELA.]

DAMASIPPUS, Stål.

Damasippus, Stål, Rec. Orth. iii. pp. 60, 101 (1875); Redtenbacher, op. cit. i. p. 147 (1906).

Conspectus specierum.

1. Elytra campo antico viridi, postico fusco vel fulvo.
   2. Femora 4 postica tota fusco-nigra . . . . . *D. fuscipes,* Redt.
   2′. Femora tota vel maxima parte pallida, viridi-olivacea . . . . . *D. westwoodi,* Stal.

1′. Elytra tota fusco-nigra vel campo antico saltem fusco . . . . . *D. striatus,* Redt.

1. **Damasippus fuscipes,** Redt.

Damasippus fuscipes, Redtenbacher, op. cit. i. p. 147 (1906).

Hab. Panama, Chiriqui (*Mus. Vienna*), Bugaba (*Champion, in coll. Godman & Salvin:* 1 ♂).

2. **Damasippus westwoodi,** Stål.

Damasippus westwoodi, Stål, Rec. Orth. iii. p. 101 (1875); Redtenbacher, op. cit. i. p. 148 (1906).

Hab. Panama (*Mus. Stockholm*), Bugaba (*Champion, in coll. Godman & Salvin, teste Redtenbacher*).—Colombia.

I can find no specimen of this species in the collection.

3. **Damasippus striatus,** Redt. (Tab. VIII. figg. 11 *a*, ♂; 11 *b*, ♀.)

Damasippus striatus, Redtenbacher, op. cit. i. p. 148 (1906).

Hab. Panama, Chiriqui (*Mus. Vienna*).—Colombia.

PRISOPUS, Serv.

Prisopus, Serville, Enc. Méth. x. p. 444 (1825); Redtenbacher, op. cit. i. p. 152 (1906).

1. **Prisopus berosus,** Westw.

Prisopus berosus, Westwood, Cat. Phasm. p. 168, t. 20. fig. 7 (1859); Redtenbacher, op. cit. i. p. 153 (1906).

Hab. Mexico (*Mus. Geneva, Mus. Vienna*), Temax in N. Yucatan (*Gaumer*); Guatemala, Los Diamantes, Pacific slope (*Champion*); Salvador (*Mus. Vienna*); Panama (*Mus. Brit., Mus. Oxford*) [*in coll. Godman & Salvin*: 2 ♂ ♂, 1 ♀].

EXPLANATION OF THE PLATES OF PHASMIDÆ.

[The names of the species as they stand on the Plates are given in square brackets when they differ from the names in the text.].

Plate V.

Fig. 1, ♂. *Bostra amplectens*, Redt.
Fig. 2, *a*, *a'*, ♂ ; *b*, *b'*, ♀. *Libethra rabdotula*, Br. [*Caulonia rabdotula*].
Fig. 3, ♂. *Paradiapheromera armata*, Br,
Fig. 4, ♂. *Paradiapheromera strumosa*, Br.
Fig. 5, *a*, *a'*, ♂ ; *b*, *b'*, ♀. *Bacunculus striatus*, Burm.
Fig. 6. ♂. *Diapheromera furcata*, Br.

Plate VI.

Fig. 1, *a*, ♂. *Bostra dorsuaria*, Stål.
Fig. 2, ♀. *Phantasis saussurei*, Bol. [*Phantasis subconstricta*].
Fig. 3, ♀. *Lamponius guerini*, Sauss.
Fig. 4, ♀. *Diapheromera calcarata*, Burm. [*Trychopeplus spinoso-lobatus*].
Fig. 5, ♂. *Pericentrus laciniatus*, Westw. [*Trychopeplus multilobatus*].
Fig. 6, ♀. *Rhynchacris ornata*, Redt.

Plate VII.

Fig. 1, ♀. *Hypocyrtus scythrus*, Westw. [*Hypocirtus strumosus*].
Fig. 2, *a*, ♂ ; *b*, ♀. *Hypocyrtus substrumosus*, Redt. [*Hypocirtus substrumosus*].
Fig. 3 *a*, ♂. *Bacteria ploiaria*, Westw. [*Phanocles ploiaria*].
Fig. 3 *b*, ♀. *Bacteria burkarti*, Sauss. [*Phanocles burkartii*].

Plate VIII.

Fig. 1, ♀. *Acanthoclonia erinacea*, Redt. [*Acanthoclina crinaceus*].
Fig. 2, ♀. *Setosa versicolor*, Redt.
Fig. 3, *a*, *b*, ♀ ; *c*, ♂. *Eucles imperialis*, Redt.
Fig. 4, ♂. *Tenerella tenerrimu*, Redt.
Fig. 5, ♀. *Brizoides nigricornis*, Redt. [*Briza nigricornis*].
Fig. 6, ♀. *Chlorophasma hyalinum*, Redt.
Fig. 7, ♀. *Euphasma bicorne*, Redt.
Fig. 8, ♀. *Metriotes armatus*, Redt.
Fig. 9, *a*, ♂ ; *b*, *c*, ♀. *Creoxylus spinosus*, Fabr.
Fig. 10, ♀. *Xera debilis*, Redt.
Fig. 11, *a*, ♂ ; *b*, ♀. *Damasippus striatus*, Redt.

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[Names in small capitals refer to Families, &c.; those in roman type to the chief reference to each species included in the work; those in italics to species incidentally mentioned, synonyms, &c.]

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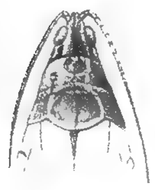
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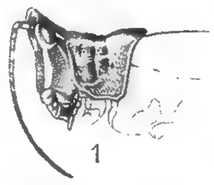
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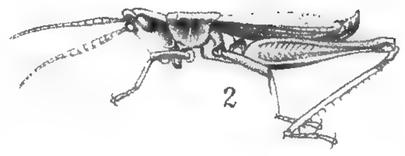
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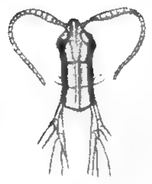
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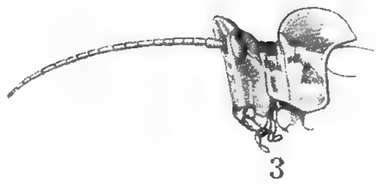
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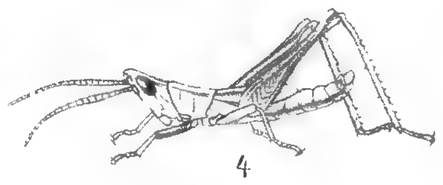

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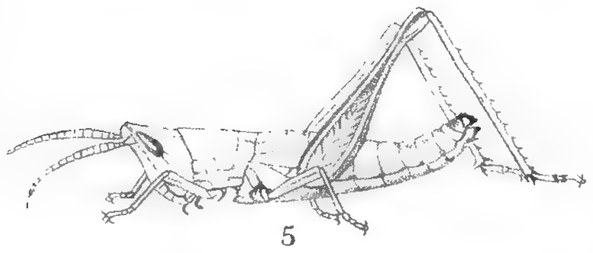

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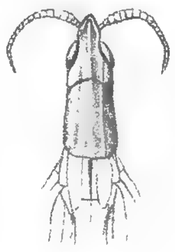

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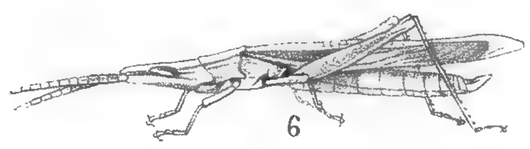

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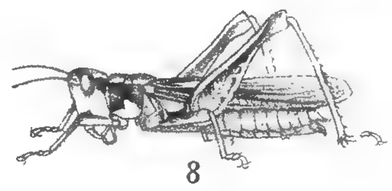

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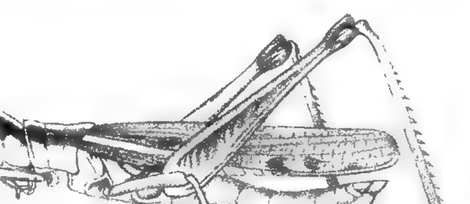

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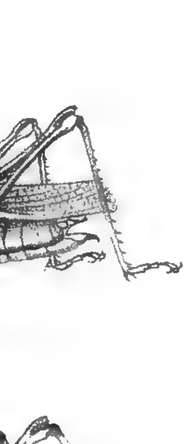

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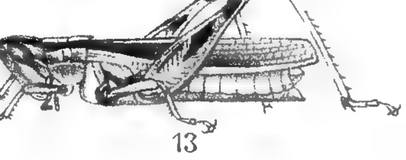

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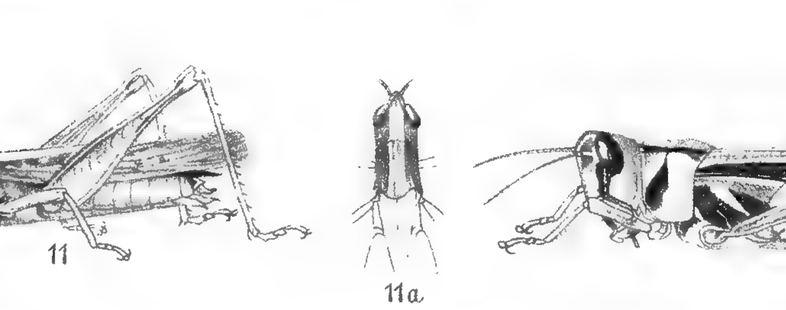

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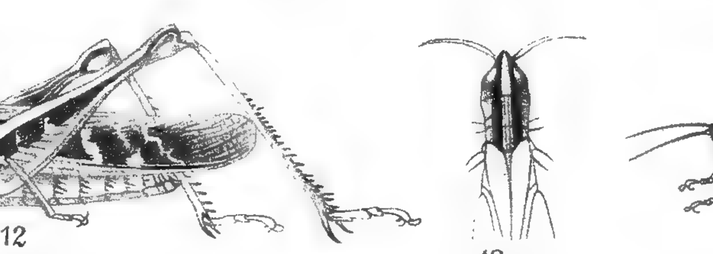

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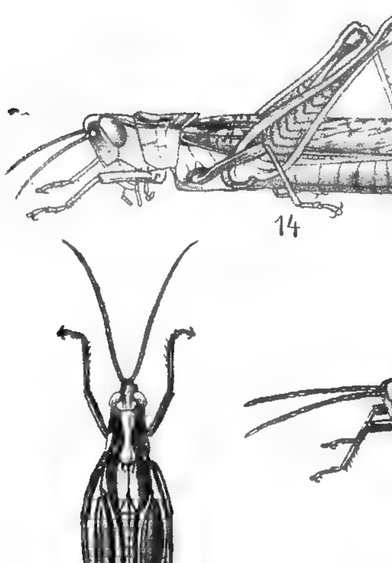

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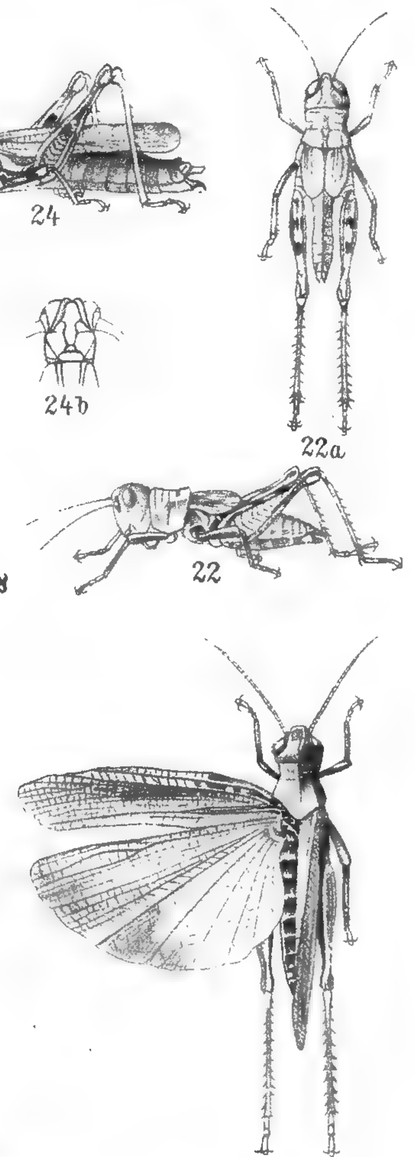

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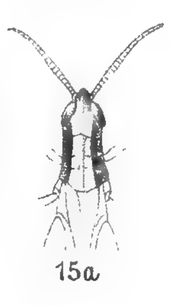
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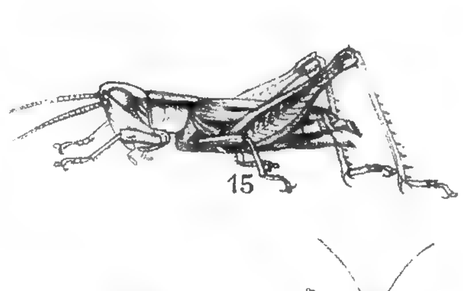

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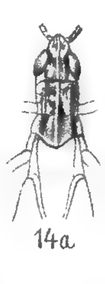
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14a

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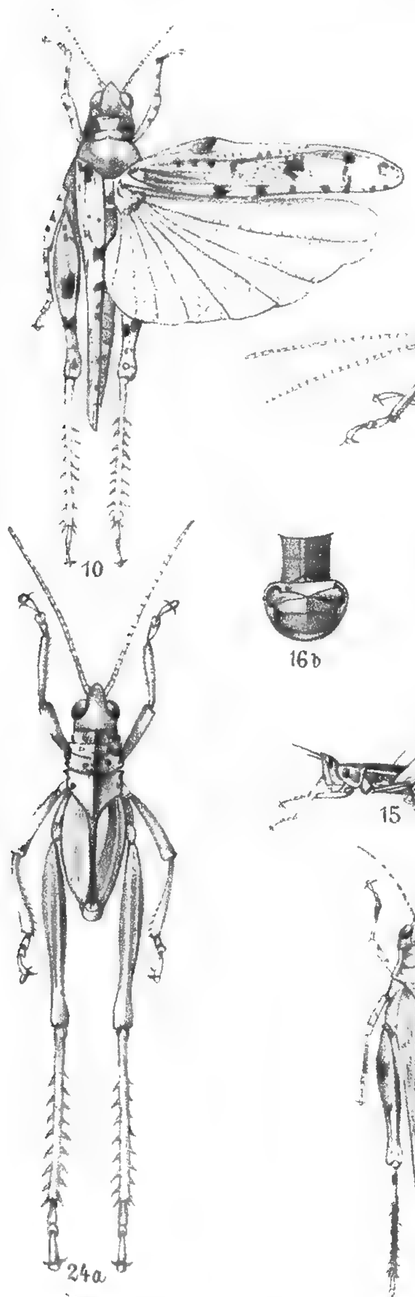
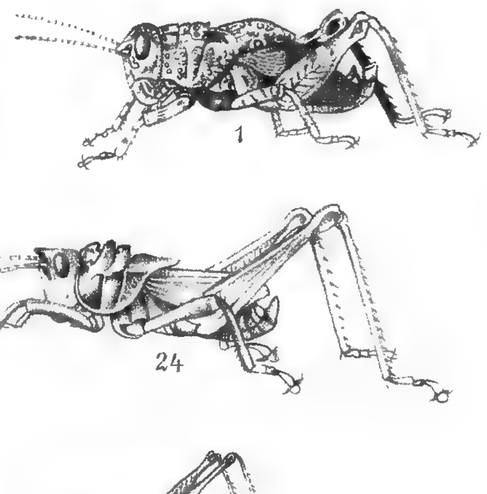
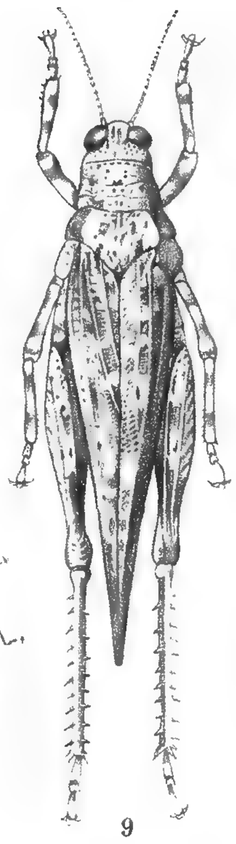

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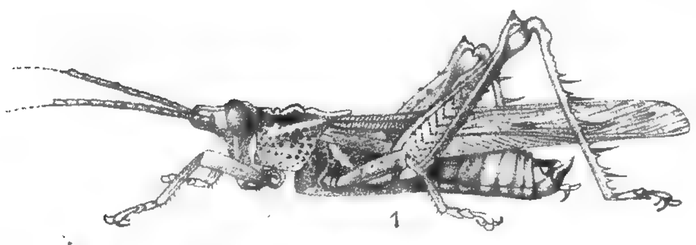
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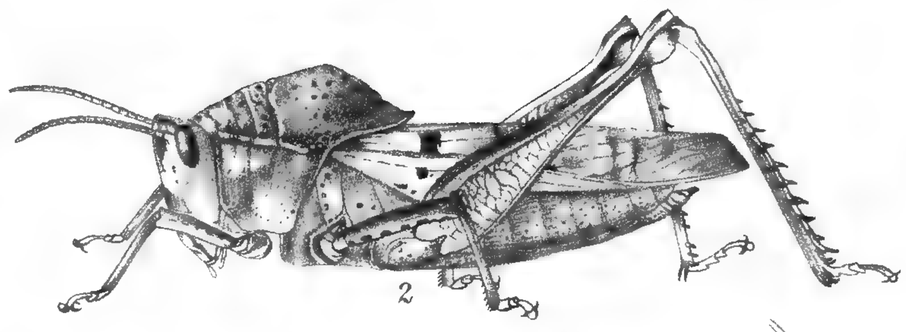
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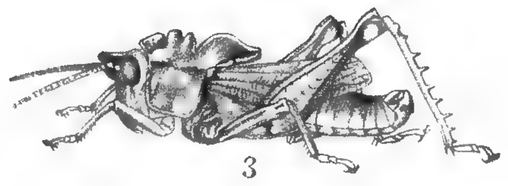
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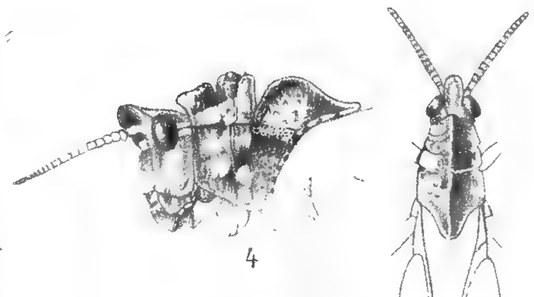
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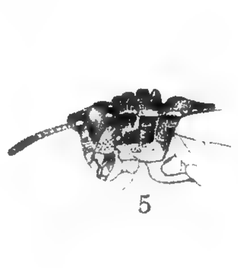




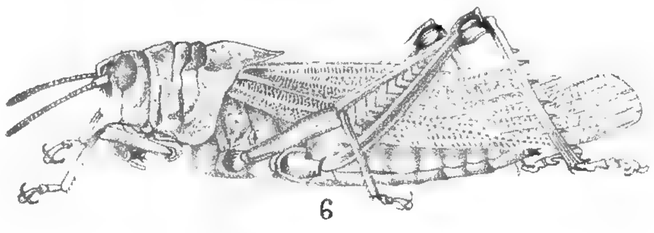

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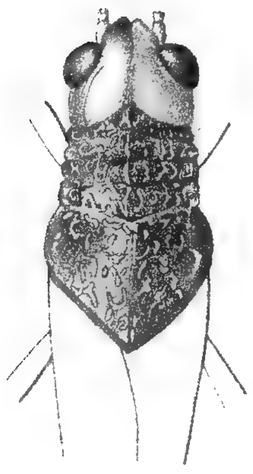

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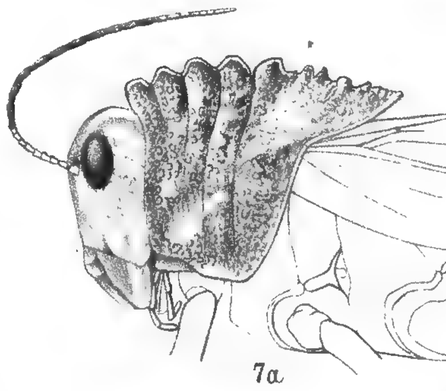

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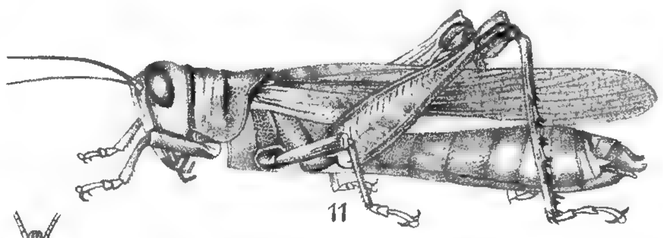

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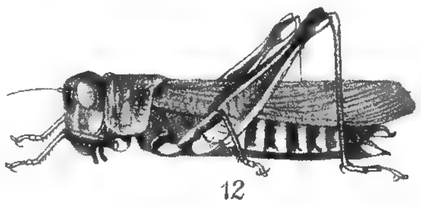
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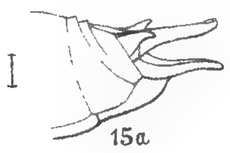

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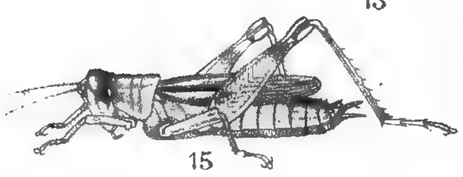

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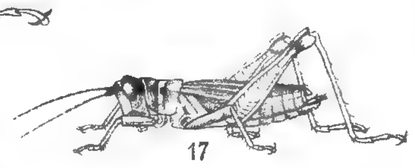

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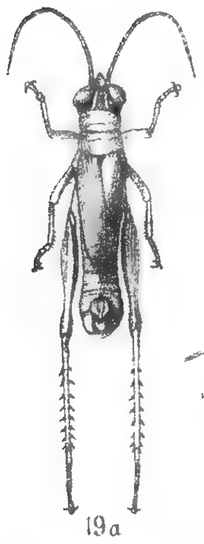

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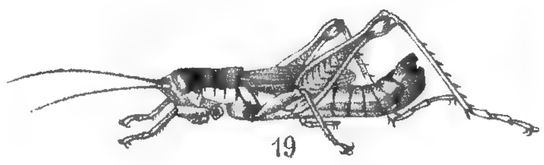

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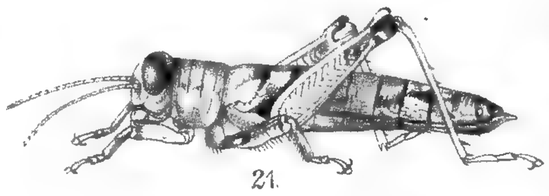

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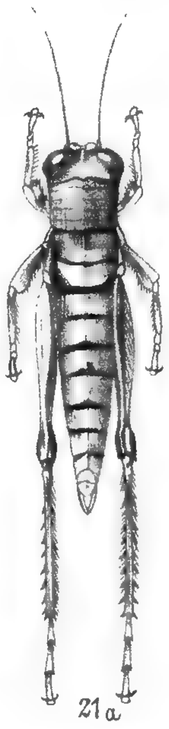

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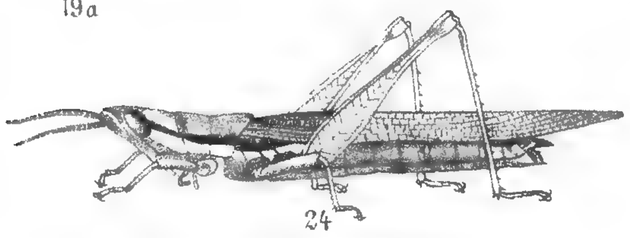

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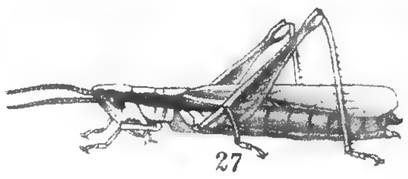
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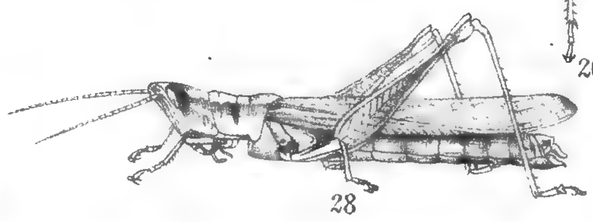

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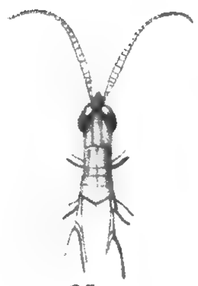
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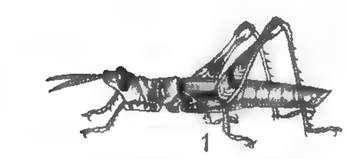

28a

1, 1 a ♂ MUNATIA INCLARATA
2 ♀ TROPIDONOTUS MEXICANUS
3, 3 a ♂ DRACONOTUS MONSTROSUS
4 ♀ » »
5, 5 a ♂ » PLUTONIUS
6, 6 a ♀ LITOSCIRTUS INSULARIS
7, 7 a TITANACRIS VELASQUEZI
8, 8 a TROPIDACRIS DUX
9 » IMPERIALIS

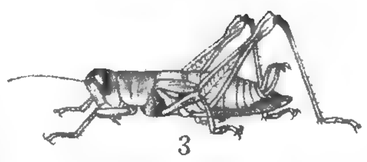
10 TROPIDACRIS CARDINALIS
11, 11 a ♀ ABILA COLLARIS
12 ♀ COSCINEUTA COXALIS
13 ♀ » OLIVACEA
14, 14 a ♀ DELLIA MEXICANA
15, 15 a ♀ ANNICERIS VARIEGATA
16 ♂ » VIRIDULA
17, 17 a ♀ » »
18 ♀ » NICARAGUÆ
19, 19 a ♂ PROCTOLABUS BRACHYPTERUS

20, 20 a ♂ PERIXERUS LÆVIS
21, 21 a-d ♀ ARISTIA MEGACEPHALA
22 ♂ VILERNA PYGMÆA
23, 23 a ♀ » »
24, 24 a ♀ LEPTYSMA MEXICANA
25, 25 a ♂ CORNOPS MEXICANUM
26, 26 a ♂ EUCOPIOCERA RUBRIPES
27 ♀ PAROPOMALA VIRGATA
28, 28 a ♀ » PALLIDA

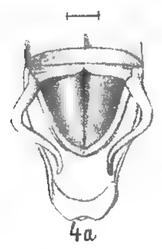
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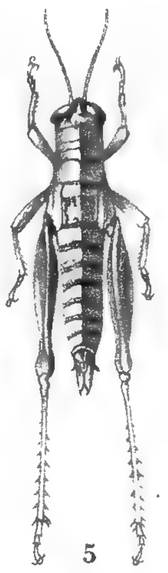

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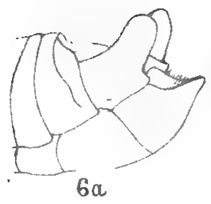

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3a


4a

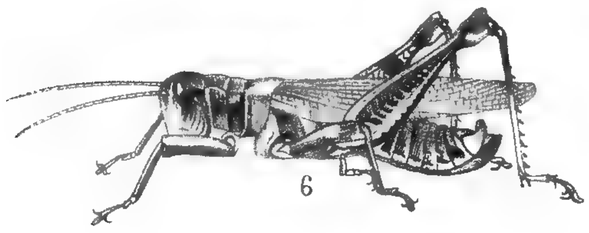

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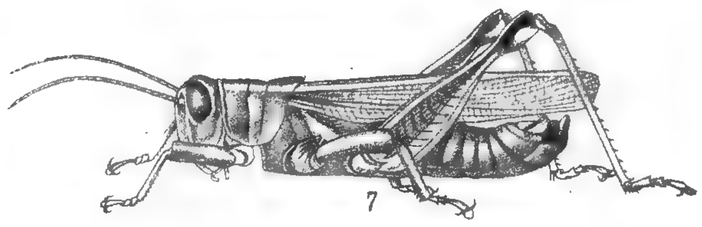

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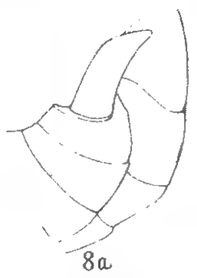

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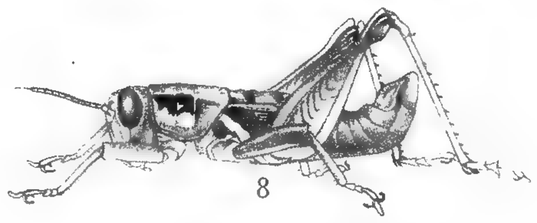

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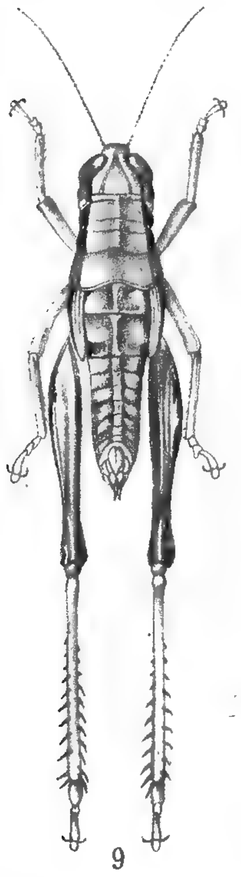

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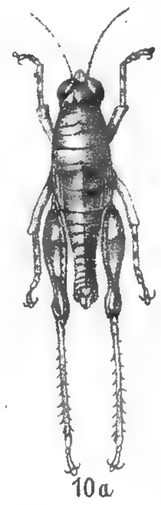

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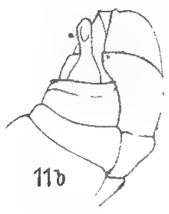

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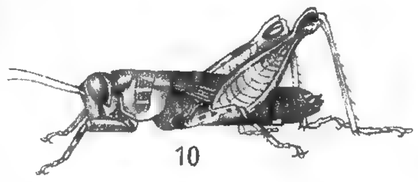

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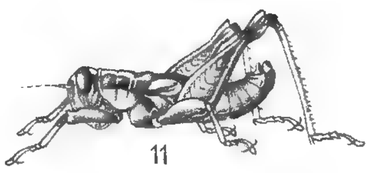

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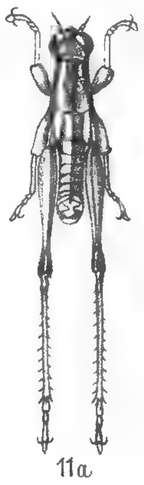

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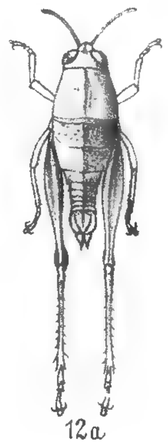

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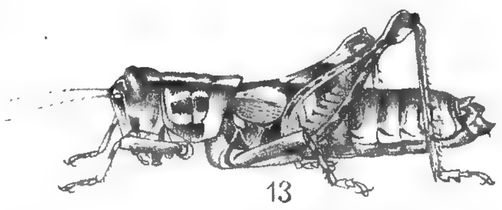

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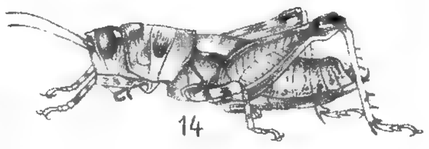

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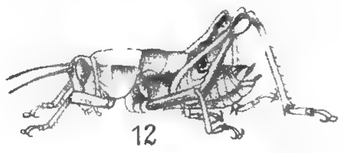

12a


13


13a

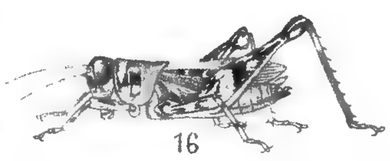

14a


14

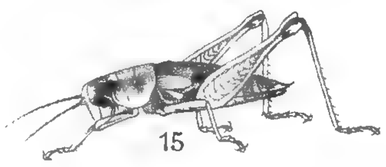

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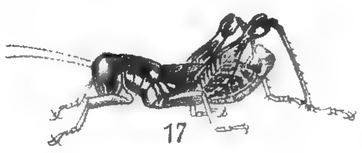

15a


15b

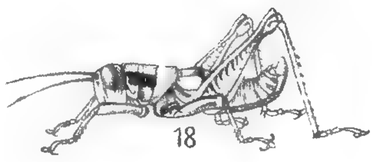

16


16a


15


17


17a


18


19a


19

20

20a

20b

23a

21

22a

22

23

24

26

25a

25

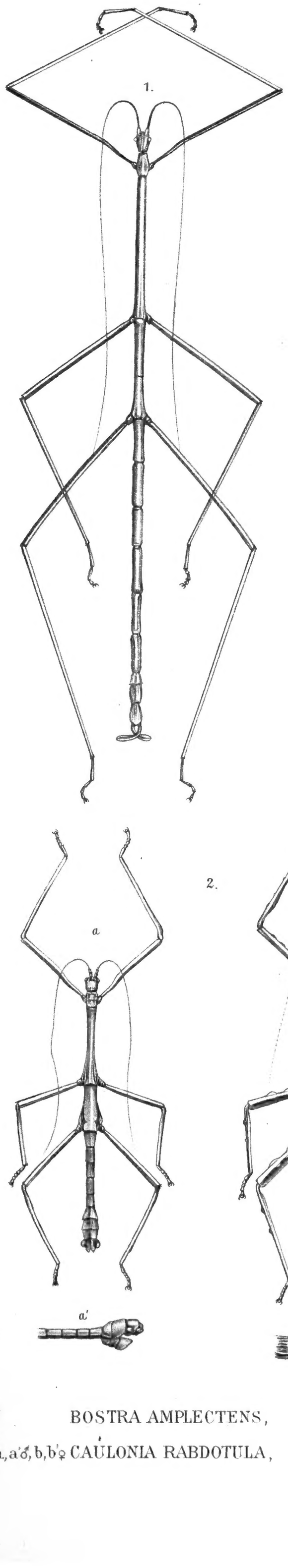
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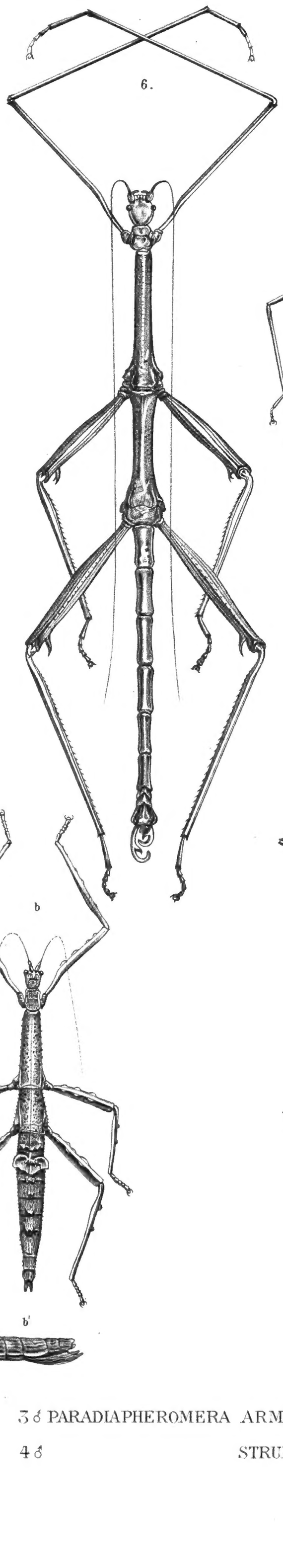
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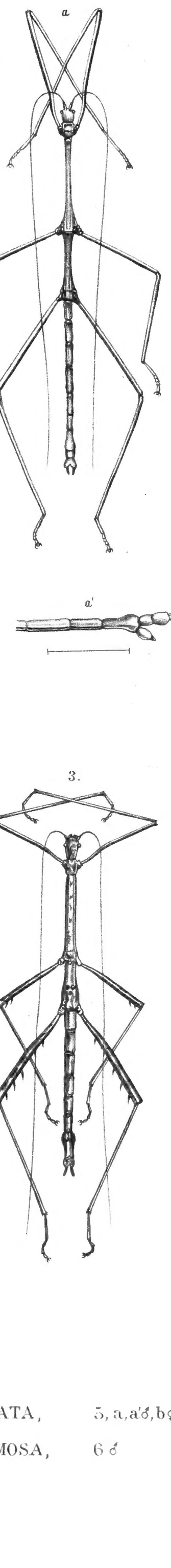
1 ♂ CLEMATODES LARREÆ.
2 ♀ " "
3, 3 a ♂ OMMATOLAMPIS SAUSSUREI.
4, 4 a ♂ " "
5 ♀ " "
6, 6 a-c ♂ MELANOPLUS SUMICHRASTI.
7, 7 a,b ♂ " THOMASI.
8, 8 a,b ♂ BARYTETTIX CRASSUS.
9 ♀ " "
10, 10 a ♂ ŒDOMERUS CORALLIPES.
11, 11 a-c ♂ SINALOA BEHRENSI.
12, 12 a ♀ PSILOTETTIX OBESUS.
13, 13 a ♀ AGROŒCOTETTIX MODESTUS.
14, 14 a ♀ ŒDOMERUS CORALLIPES.
15, 15 a,b ♂ MELANOPLUS GENICULATUS.
16, 16 a ♀ DICHROPLUS MEXICANUS.
17, 17 a ♂ PHILOCLEON NIGROVITTATUS.
18 ♀ MELANOPLUS NITIDUS.
19, 19 a ♂ MELANOPLUS NITIDUS.
20, 20 a,b ♂ PARAIDEMONA MIMICA.
21 ♂ SPHENARIUM BORREI.
22, 22 a ♀ ICHTHYDION MEXICANUM.
23, 23 a ♂ XYRONOTUS AZTECUS.
24 ♀ ATYPHOSCIRTUS CALIFORNICUS.
25, 25 a ♂ " "
26 ♀ " MEXICANUS.
27, 27 a ♂ ASPIDOPHYMA AMERICANA.

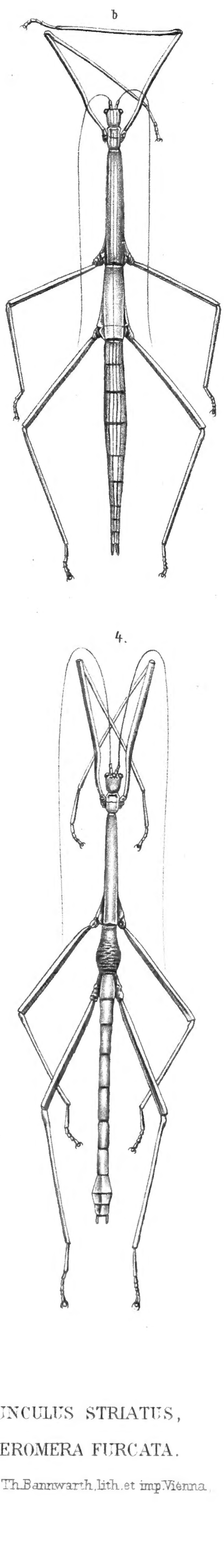
Edna L. Hyer del.

Th. Bannwarth, lith. et imp. Vienna.





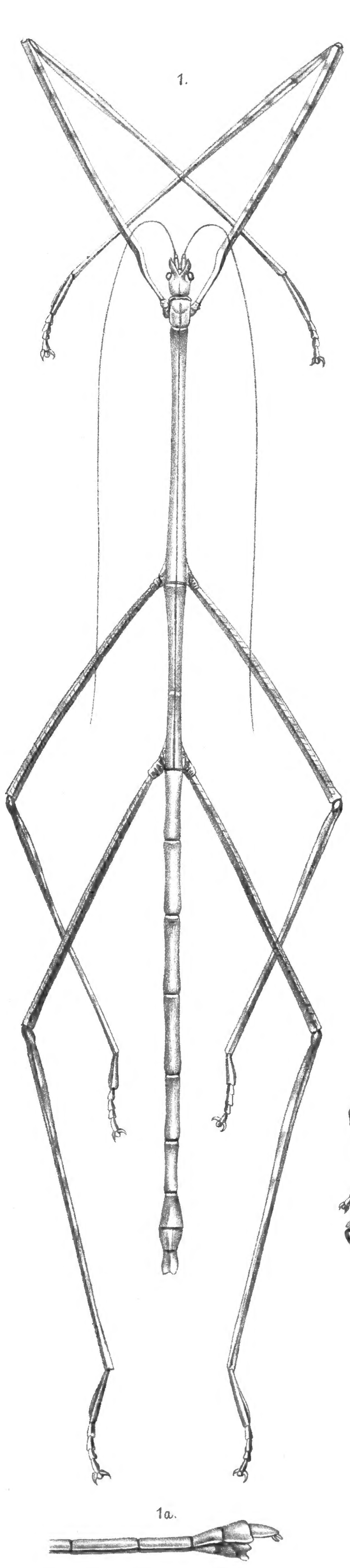


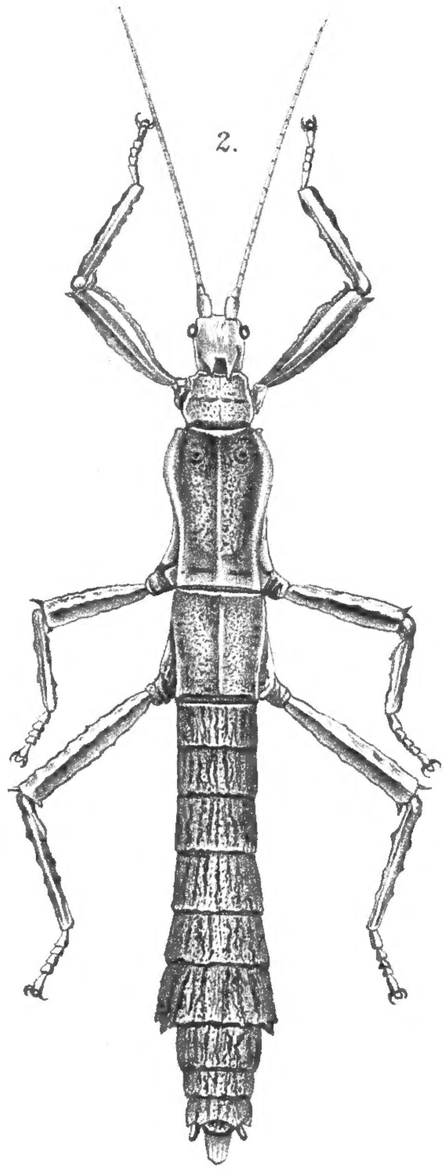


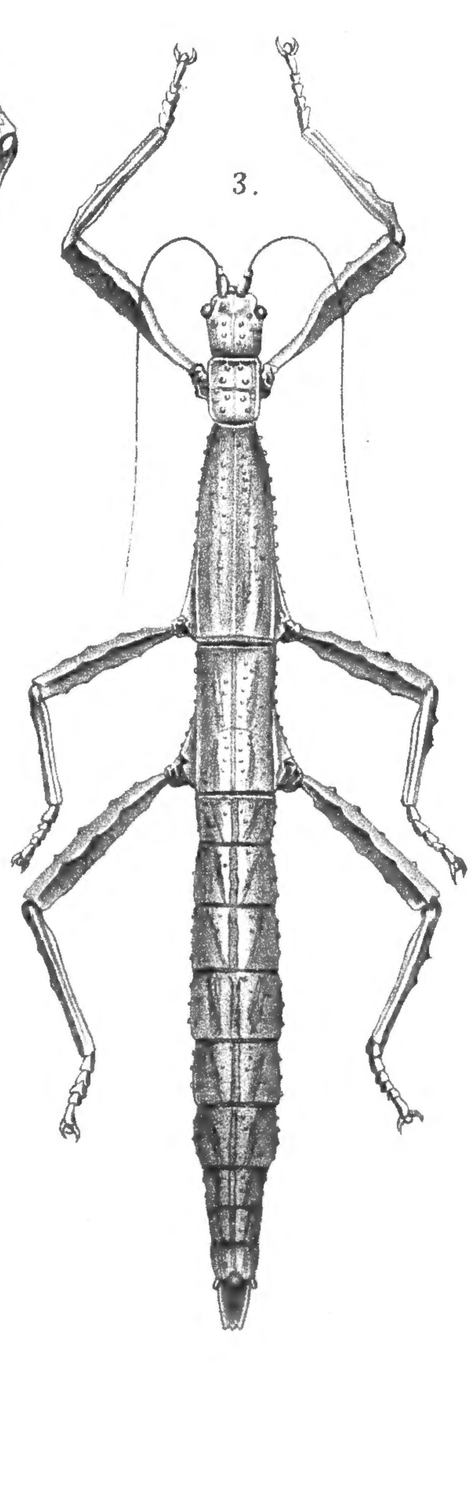
1 ♂ BOSTRA AMPLECTENS, 3 ♂ PARADIAPHEROMERA ARMATA, 5, a, a' ♂, b ♀ BACUNCULUS STRIATUS,

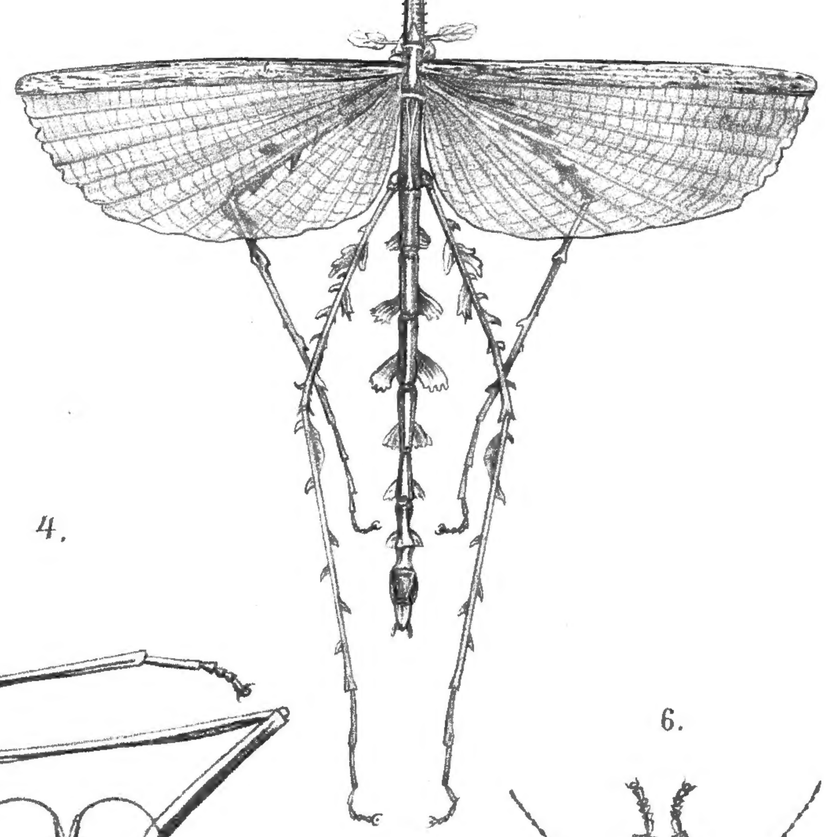
2, a, a' ♂, b, b' ♀ CAULONIA RABDOTULA, 4 ♂ STRUMOSA, 6 ♂ DIAPHEROMERA FURCATA.

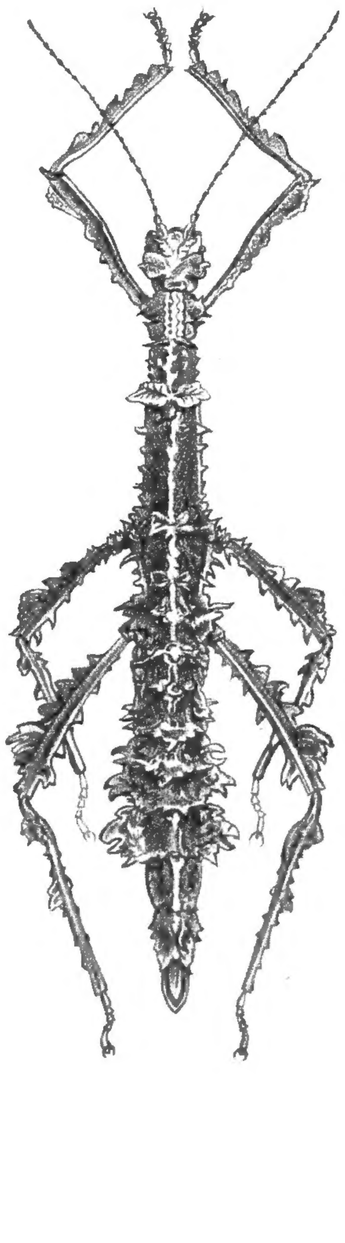
Th. Bannwarth, lith. et imp. Vienna.











1,1a ♂ BOSTRA DORSUARIA

2 ♀ PHANTASIS SUBCONSTRICTA

3 ♀ LAMPONIUS GUERINI

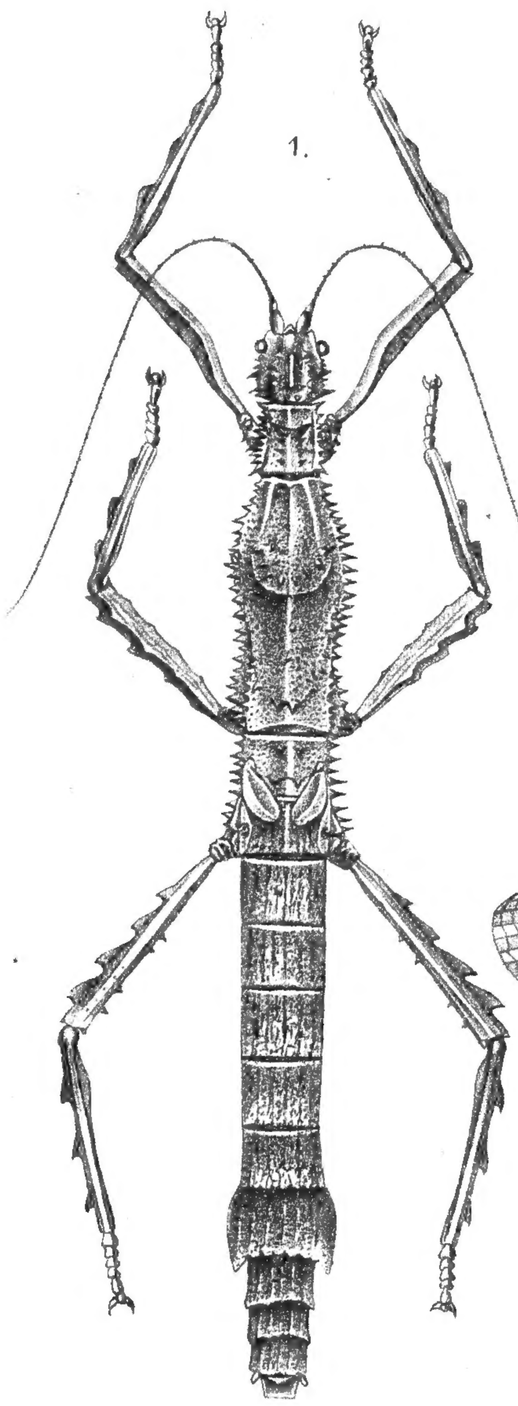
4 ♀ DIAPHEROMERA CALCARATA BURM

5 ♂ TRYCHOPEPLUS MULTILOBATUS

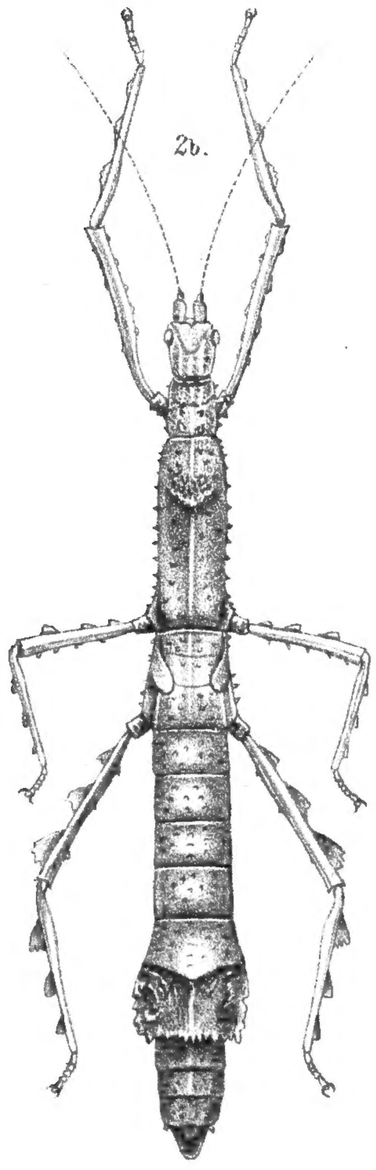
6 ♀ RHYNCHACRIS ORNATA.

Th. Bannwarth, lith. et imp. Vienna.

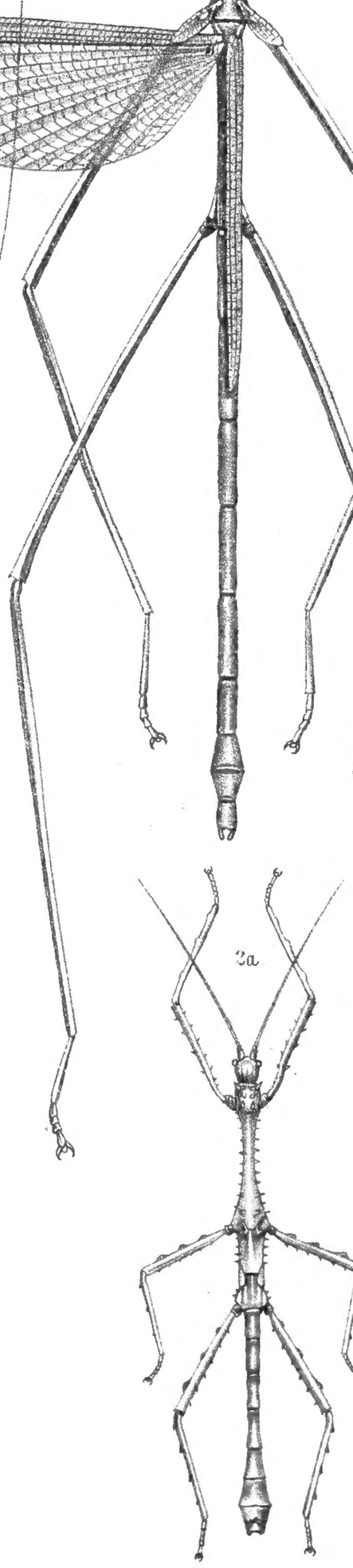
1.



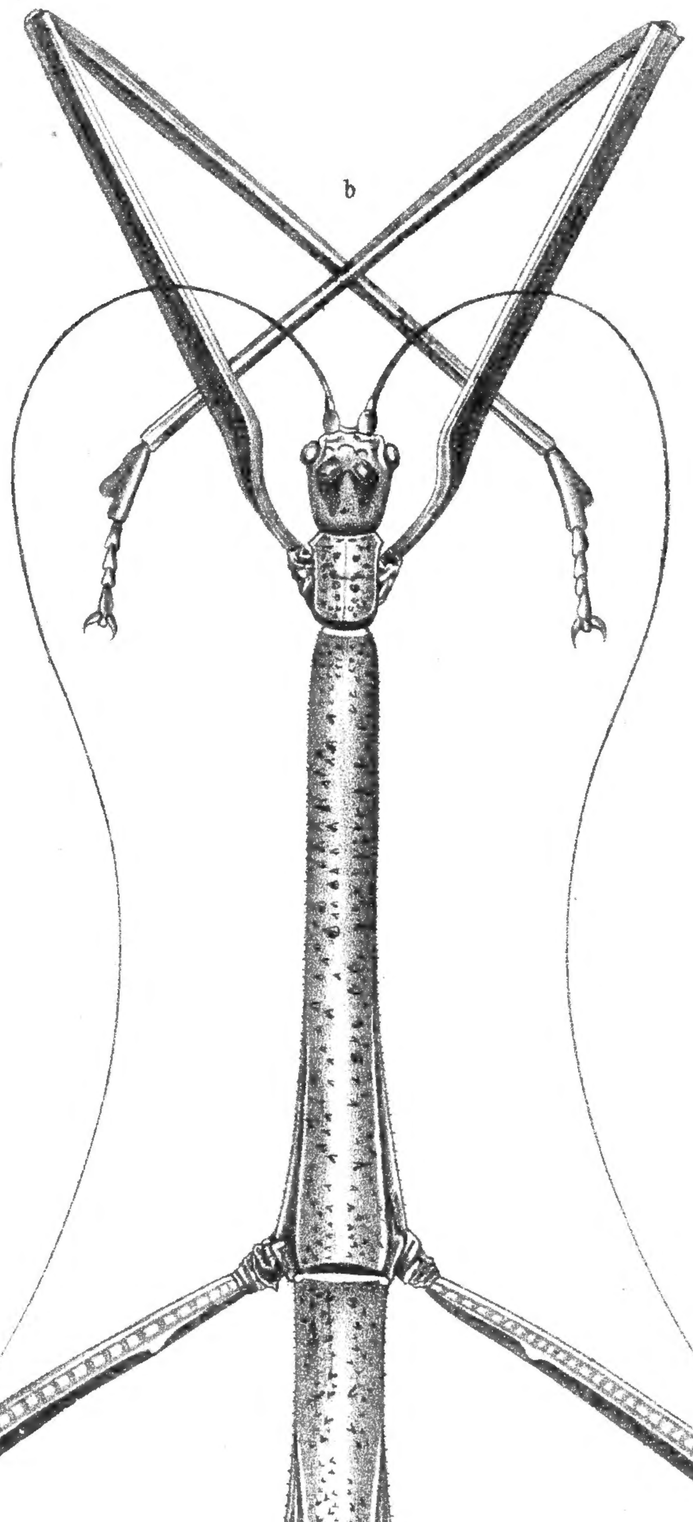
2.



2a.

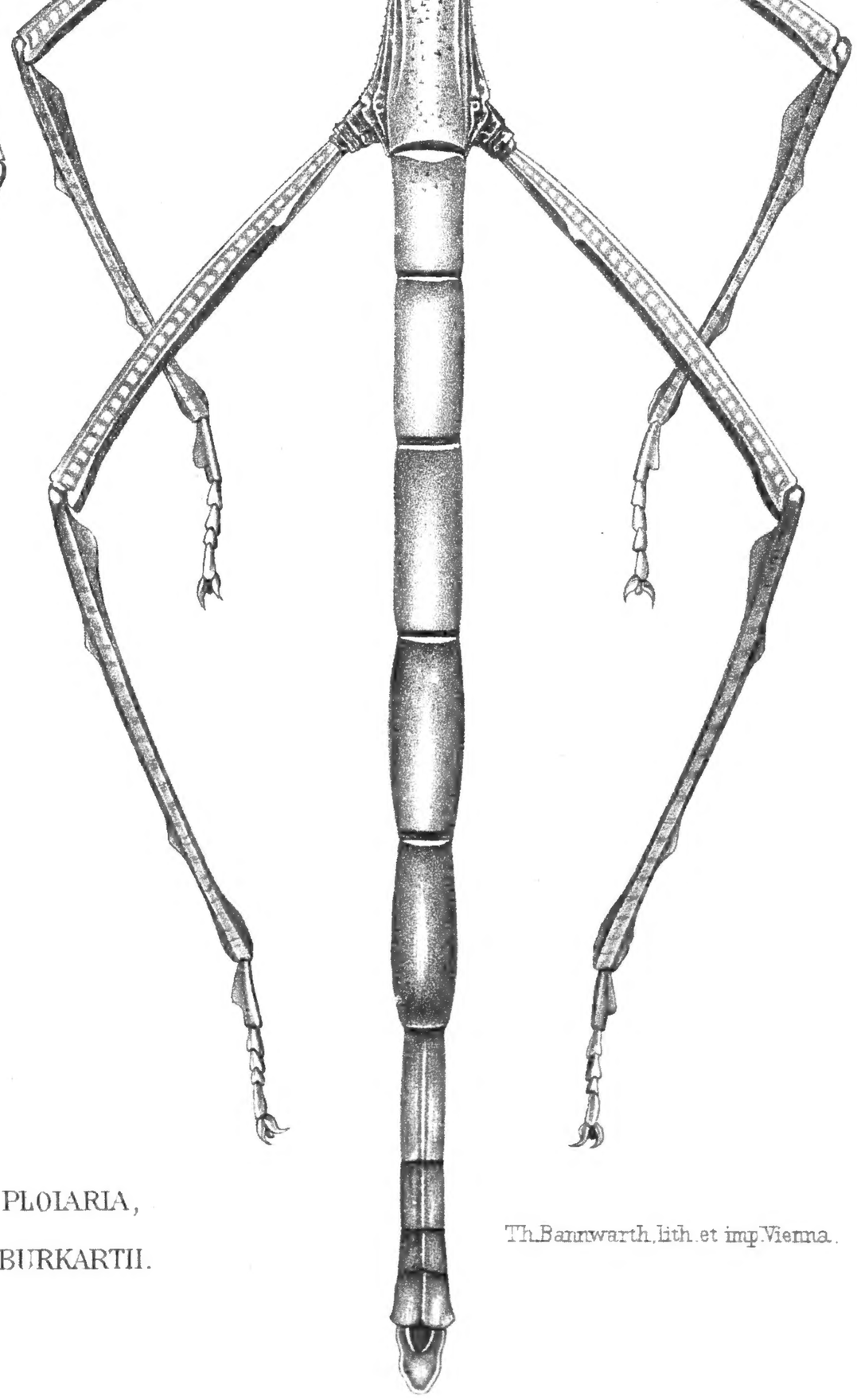


3.



3a.

3b.



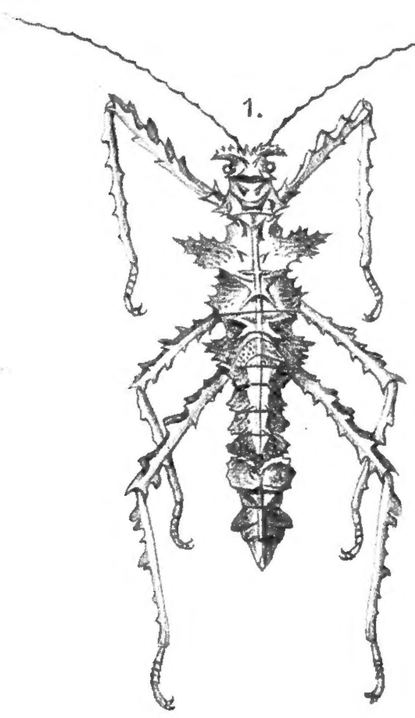
1 HYPOCIRTUS STRUMOSUS,

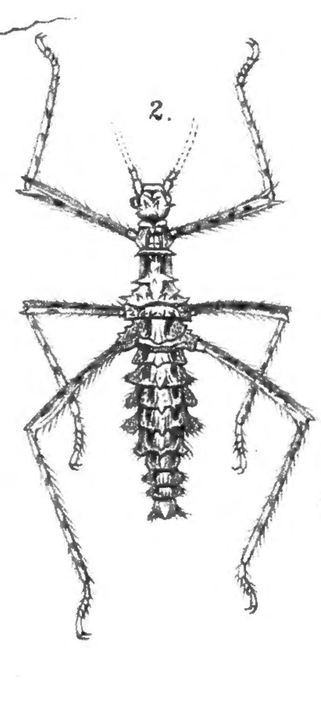
2, a ♂, b ♀ " SUBSTRUMOSUS,

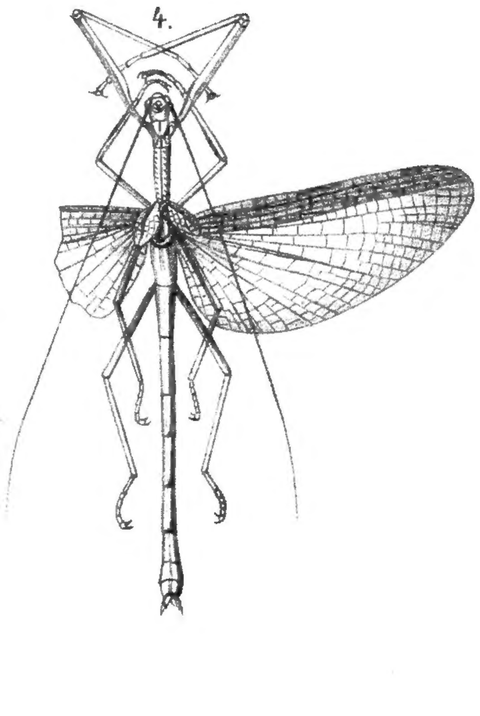
3 a ♂ PHANOCLES PLOIARIA,

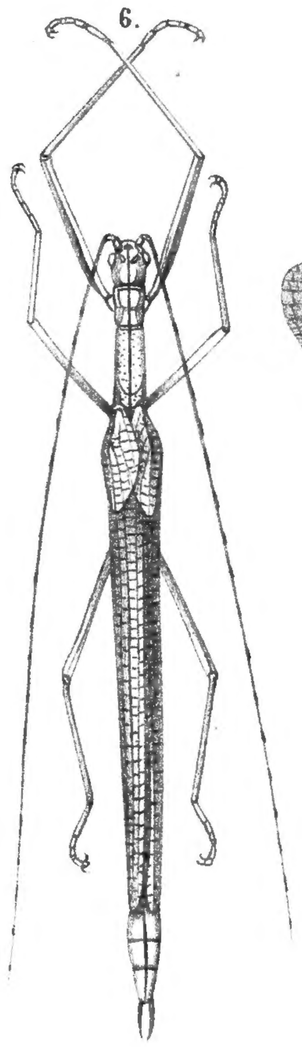
3 b ♀ " BURKARTII.

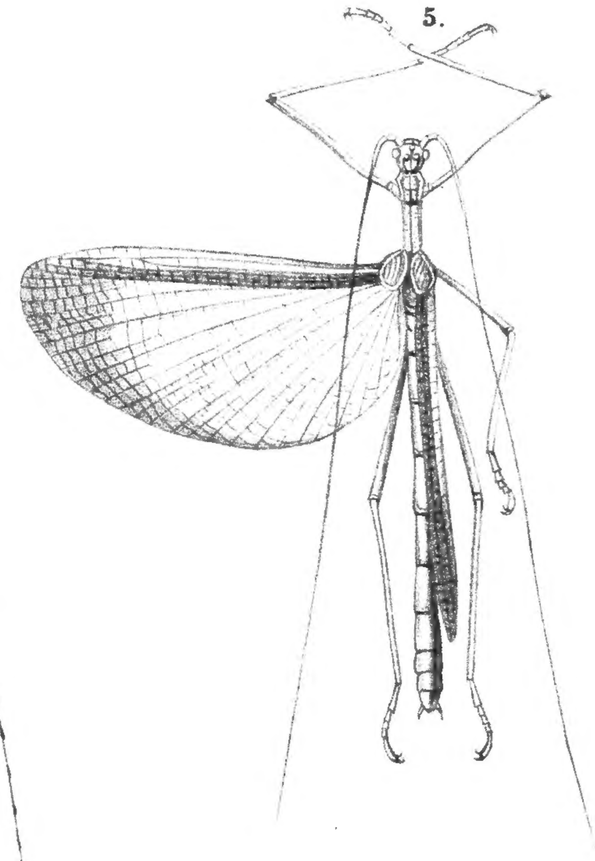
Th. Bannwarth, lith. et imp. Vienna.

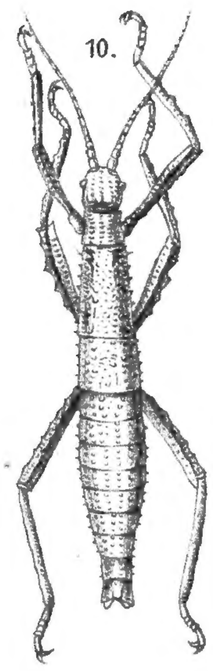

1.

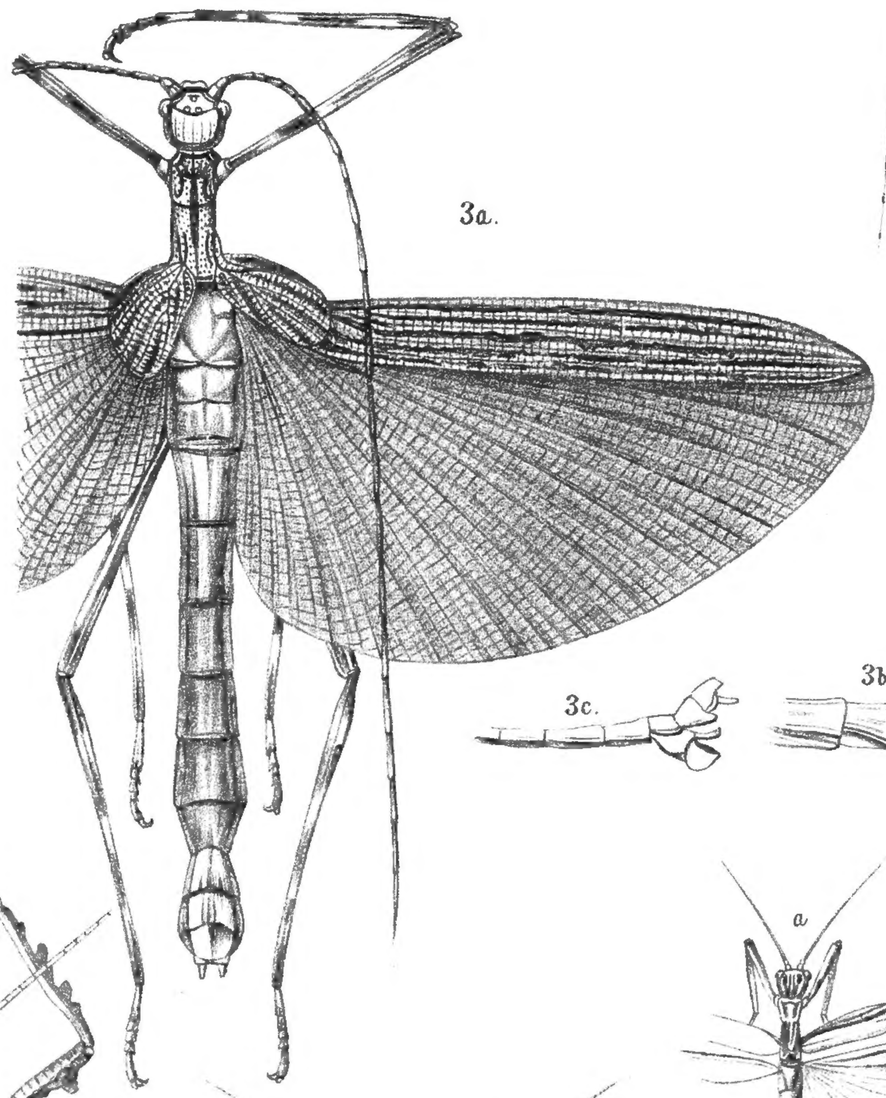

2.


4.

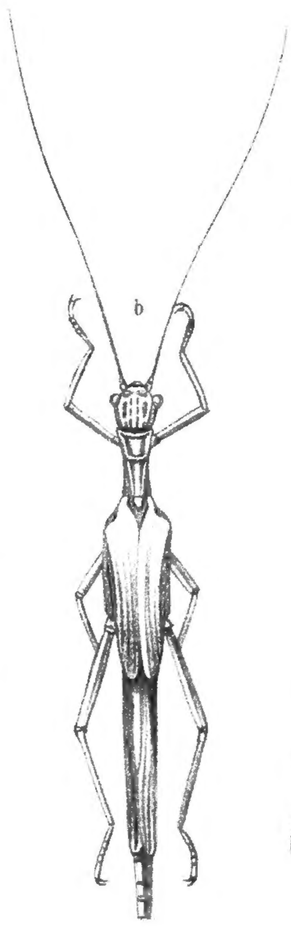

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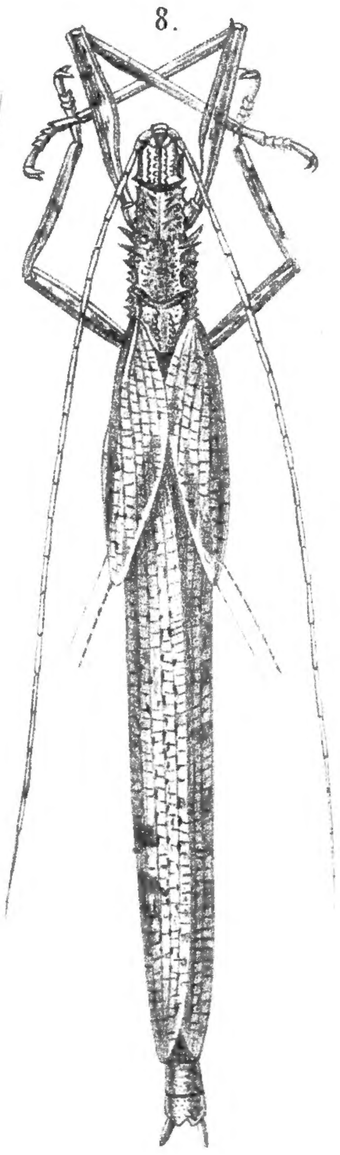

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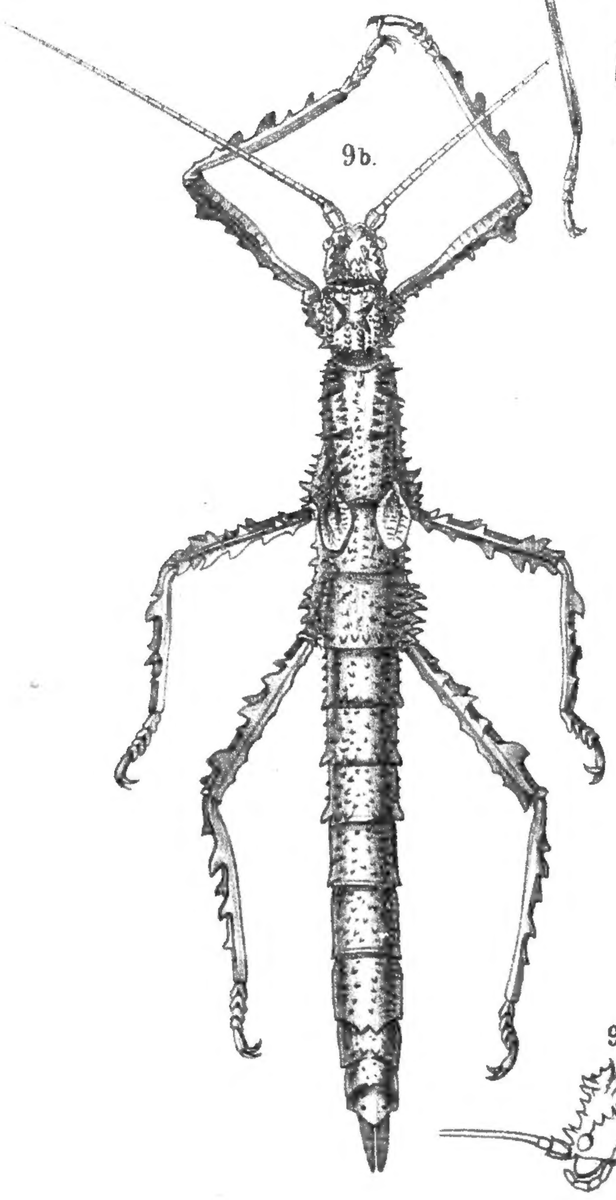

10.

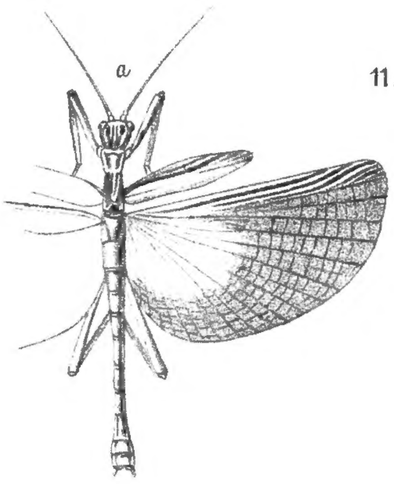

3a.

3c. 3b.

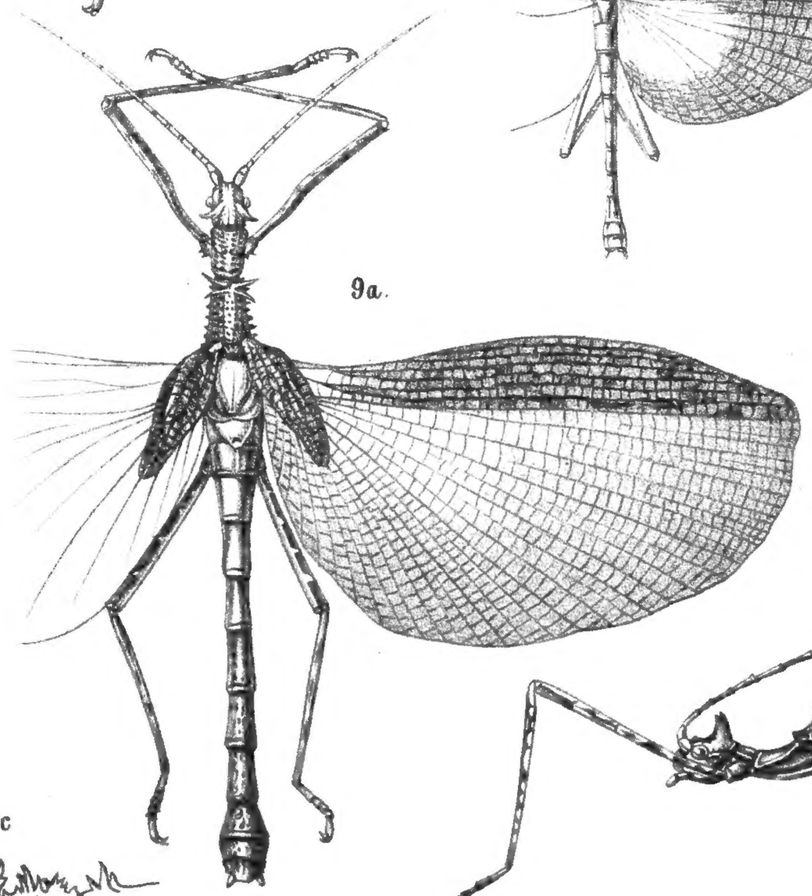

b

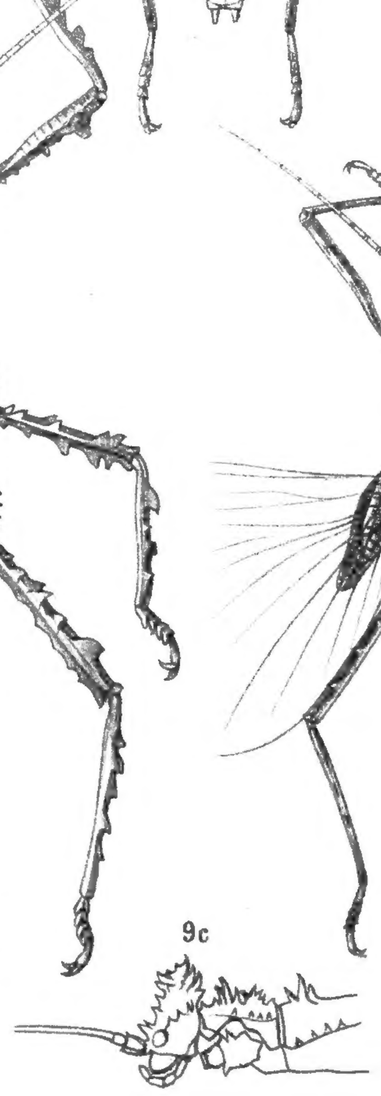

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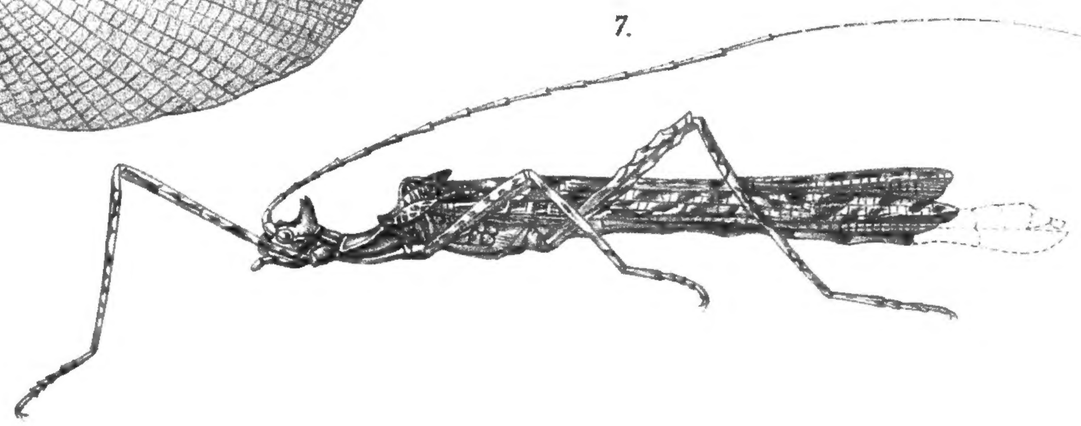

9b.


a

11.


9a.


9c


7.

1 ♀ ACANTHOCLINA CRINACEUS,

2 SETOSA VERSICOLOR,

3, a, b ♀, c ♂ EUCLES IMPERIALIS,

4 TENERELLA TENERRIMA,

5 BRIZA NIGRICORNIS,

6 CHLOROPHASMA HYALINUM,

7 EUPHASMA BICORNIS

8 METRIOTES ARMATUS,

9, a ♂, b, c ♀ CREOXYLUS SPINOSUS,

10 XERA DEBILIS,

11, a ♂, b ♀ DAMASIPPUS STRIATUS.

Th. Bannwarth. lith. et imp. Vienna.